The use of stems in the selection of International Nonproprietary Names (INN) for pharmaceutical substances

2011
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Programme on International Nonproprietary Names (INN)
Quality and Safety: Medicines
Essential Medicines and Pharmaceutical Policies
The use of stems in the selection of International Nonproprietary Names (INN) for pharmaceutical substances

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PREFACE

The document "The Use of Common Stems in the Selection of INNs" is intended primarily for persons and companies applying to the WHO INN Programme for the selection of an INN for a new pharmaceutical substance and has been designed to assist in the process of devising a suitable proposal. It will also be of assistance to institutions and specialists involved in the review of proposed INNs, including drug regulatory authorities, pharmaceutical manufacturers, patent offices and trade mark offices as well as for scientists, teachers, health professionals and other persons interested generally in drug nomenclature. The document is composed of four main parts and annexes.

Part I "Introduction" describes the WHO INN Programme, INN selection procedure, and criteria for name selection and gives general information on the INN stem system.

Part II contains the list of all INN stems. It is composed of two indexes, one entitled "Alphabetical List of Common Stems" which presents the list of stems, and another entitled "Alphabetical List of Common Stems and their definitions" which includes a definition for each stem.

Part III presents the stem classification system used by the INN Programme to categorize the main activity of pharmaceutical substances. Each category included in the list is given an appropriate code consisting of a capital letter and three digits. When INNs for substances belonging to a given category include a specific stem, appropriate information is included in the table.

Part IV of the document entitled "Alphabetical List of Stems Together With Corresponding INNs" serves as a listing of all proposed INNs (published in lists 1 - 105) containing INN stems. The list is organized in alphabetical order (as set out in Part II) and includes all INNs containing individual stems. In addition, under each stem heading information is given on INNs in which the preferred stem has been used but not in accordance with its definition as well as on INNs which belong to the same group of pharmaceutical substances but in which no preferred stem has been used. To facilitate the use of Part IV, the lay-out of information is presented as a diagram on page 6 and is complemented by additional information given at the end of part I "Introduction".

Six annexes attached to the document are intended to be of assistance to users. Annex 1 reproduces the Procedure for the Selection of Recommended International Nonproprietary Names for Pharmaceutical Substances as approved by the WHO Executive Board in its resolution EB15.R7 as amended by resolution EB115.R4. Annex 2 reproduces General Principles for Guidance in Devising International Nonproprietary Names for Pharmaceutical Substances as approved by the WHO Executive Board in the above-mentioned resolution, as amended. Annex 3 explains the nomenclature scheme for monoclonal antibodies. Annex 4 explains the nomenclature scheme for Gene Therapy Products. Annex 5 gives reference to the volumes of the WHO Drug Information in which proposed lists of INNs have been published. Annex 6 "Why INN?" gives general information on the present situation of WHO INN Programme and its achievements.
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PART I

INTRODUCTION

WHO'S INN PROGRAMME
The World Health Organization (WHO) has a constituti onal responsibility to "develop, establish and promote international standards with respect to biological, pharmaceutical and similar products". The International Nonproprietary Names (INN) Programme is a core activity embedded in the normative functions of WHO and has served the global public health and medicines community for over fifty years. The Programme was established to assign nonproprietary names to pharmaceutical substances so that each substance would be recognized by a unique name. Such names are needed for the clear identification, safe prescription and dispensing of medicines, and for communication and exchange of information among health professionals. INNs can be used freely because they are in the public domain. In addition to being a basic component of many WHO medicines activities and programmes, INNs are used in regulatory and administrative processes in many countries. They are also intended for use in pharmacopoeias, labelling, and product information and to provide standardized terminology for the international exchange of scientific information.

INN SELECTION PROCEDURE
Each name proposed for designation as an INN is examined and selected in accordance with a formal procedure. Requests for INNs can be submitted directly to WHO (application forms online at http://www.who.int/medicines/services/inn/en/index.html). In some countries where national nomenclature commissions exist, applications may also be made through the national nomenclature authority.

Members of the WHO Expert Panel on the International Pharmacopoeia and Pharmaceutical Preparations (or other Panel as appropriate) are officially designated to select nonproprietary names. Based on the information provided, an agreed name is selected and published as a proposed INN. During a four month period, any person can make comments or lodge a formal objection to the proposed name. If no objection is raised, this agreed name is published as the recommended INN.

In 1993, the World Health Assembly endorsed resolution WHA46.19 which states that trade marks should not be derived from INNs and INN stems should not be used in trade marks. The Assembly reasoned that such practice could frustrate the rational selection of INNs and ultimately compromise the safety of patients by promoting confusion in drug nomenclature. Above all, INNs are protected for use in the public domain.

CRITERIA FOR SELECTION
International Nonproprietary Names (INN) should be distinctive in sound and spelling. They should not be inconveniently long and not be liable to confusion with names in common use. Information on the selection procedure and general criteria in devising INNs is set out in Annexes 1 and 2.

INN STEMS
Stems define the pharmacologically related group to which the INN belongs. The present document describes stem use procedure and includes, in Parts II and IV, the list of common stems for which chemical and/or pharmacological categories have been established. These stems and their definitions have been selected by WHO experts and are used when selecting new international nonproprietary names. Because the nomenclature process is ongoing and constantly under revision, definitions of older stems are modified as and when newer information becomes available.

Whenever possible, an INN should include the "common stem" expressing the pharmacologically-related group to which the substance belongs. Names that are likely to convey an anatomical, physiological, pathological or therapeutic suggestion are avoided.
In addition, certain rules have been established in devising INNs to facilitate their use internationally. For example, to make pronunciation possible in various languages, the letters "h" and "k" should be avoided; "e" should be used instead of "ae" and "oe", "i" instead of "y", "t" instead of "th" and "f" instead of "ph".

**INFORMATION ON USING PART IV "ALPHABETICAL LIST OF STEMS TOGETHER WITH CORRESPONDING INNs"

The following information complements or describes the diagram set out on page 6.

1. The list includes INNs published in *Proposed International Nonproprietary Names Lists 1 - 105* categorized according to the list of stems (see Annex 5).

For each stem, INNs have been classified as:

   (a) INNs in which the preferred stem has been used in accordance with its definition;

   (b) INNs in which the preferred stem has been used, but not in accordance with its definition;

   (c) INNs which belong to the same group of pharmaceutical substances but in which the preferred stem has not been used. (This part of the list is not exhaustive).

2. References to nationally used syllables published in the British Approved Names (BAN) Dictionary and the USP Dictionary of USAN and International Drug Names have also been made wherever applicable. Whenever the BAN or USAN definitions are not identical to the INN definition they are set out in brackets under the INN definition.

3. The codes presented on the diagram as Stem Classification refer to the stem classification system used by the INN Programme described in Part III of the document.

4. Symbol (x) indicates stems included as examples in Article 9 of the "General Principles for Guidance in Devising International Nonproprietary Names for Pharmaceutical Substances" (see Annex 2).

5. Symbol (d) indicates stems that were formerly used, but are no longer formally acknowledged by the INN Programme.
**Layout of information**

- **Stem classification**
- **Stem definition**
- **National Name(s)**

<table>
<thead>
<tr>
<th>Stem</th>
<th>INN (English)</th>
<th>List of proposed INN</th>
</tr>
</thead>
<tbody>
<tr>
<td>calci</td>
<td>Vitamin D analogues/derivatives</td>
<td></td>
</tr>
<tr>
<td>N.8.0.0</td>
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<td></td>
</tr>
</tbody>
</table>

**Graphic Formula**

**Names in which the preferred stem has been used in accordance with its definition**

- alfacalcidol (40), calcifediol (26), calcipotriol (61), calcitriol (39), colecalciferol (13), doxercalciferol (82), ergocalciferol (13), falecalcitriol (74), lexacalcitol (71), maxacalcitol (75), paricalcitol (78), secalciferol (62), seocalcitol (78), tacalcitol (65)

**Names in which the preferred stem has been used but not in accordance with its definition**

- calcitonin (31) (polypeptide)
- dihydrotachysterol (1)

**Names which belong to the same group of pharmaceutical substances and in which no preferred stem has been used (this part of the list is not exhaustive)**

- (x) stems that are included in article 9 of the General Principles
- (d) stems that were formerly used, but are no longer formally acknowledged by the INN Programme.
# Part II A

**ALPHABETICAL LIST OF COMMON STEM**

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<thead>
<tr>
<th><strong>A</strong></th>
<th><strong>B</strong></th>
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<tr>
<td>-abine (see -arabine and -citabine)</td>
<td>-bacept (see -cept)</td>
</tr>
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<td>-ac</td>
<td>-bactam</td>
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<tr>
<td>-acetam (see -racetam)</td>
<td>-bamate</td>
</tr>
<tr>
<td>-actide</td>
<td>-bepraze</td>
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<td>-adol/-adol-</td>
<td>-benakin (see -kin)</td>
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<td>-adom</td>
<td>-bendan (see -dan)</td>
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<td>-afenone</td>
<td>-bendazole</td>
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<td>-afil</td>
<td>-bercept (see -cept)</td>
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<td>-aj-</td>
<td>-bermin (see -emin)</td>
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<td>-bersat</td>
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<td>-betal (see pred)</td>
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<td>-alol (see -olol)</td>
<td>-bolen</td>
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<td>-aloxx (see -ox)</td>
<td>-bradine</td>
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<td>-amivir (see vir)</td>
<td>-brate (see -fibrate)</td>
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<td>-bufen</td>
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<td>-cain-</td>
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<td>calci</td>
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<td>-dox (see -ox/-aloxx)</td>
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-entan
(-)eptacog (see -cog)
-erg
-ermin
-estr
-etanide (see -anide)
-exakin (see -kin)
-exine

F
-farcept (see -cept)
-fenamate (see -fenamic acid)
-fenamic acid
-fenin
-fenine
-fentanil
-fentrine
-fermin (see -ermin)
-fiban
-fibrate
-filermin (see -ermin)
-flapon
-flurane
-formin

G
-gab
-gado-
-gatran
-gene
-gest
-gestr- (see estr)
-giline
-gillin
-gli
-gliflozin (see gli)
-gliltin (see gli)
-glitazar (see gli)
-glitazone (see gli)

INN – The use of stems

-glumide
-glutide (see -tide)
-golide
-gosivir (see vir)
-gramostim (see -stim)
-grastim (see -stim)
-grel-/grel

I
-ibine (see -ribine)
-icam
-ifene
-igetide (see -tide)
-ilide
-imex
-imibe
-imod
-imus
-ine
-inostat (see -stat)
-io-
-iocam

K
-kacin
-kalant
-kalim
-kef-
-kin
-ki(n)- (see -mab)
-kinra
-kiren

L
-lefacept (see -cept)
-leukin (see -kin)
-listat (see -stat)
-lubant
-lukast (see -ast)
-lutril (see -tril/-trilat)

M
-mab
-mantadine

-mantine (see -mantadine)
-mantone (see -mantadine)
-mapimod (see -imod)
-mastat (see -stat)
-meline
-mer-/mer
-mer
-mesine
-mestane
-metacin
-met(h)asone (see pred)
-micin
-mifene (see -ifene)
-milast (see -ast)
-mito-
-monam
-morelin (see -relin)
-mostim (see -stim)
-motide (see -tide)
-motine
-moxin
-mulin
-mustine
-mycin

N
-nab
-nabant
-nacept (see -cept)
-nakin (see -kin)
-nakinra (see -kinra)
-nal-
-naritide (see -tide)
-navir (see vir)
-nermin (see -ermin)
-nercept (see -cept)
-nertant (see -tant)
-netant (see -tant)
-nicate (see nico-)
-niclina
-nico-/nic-/ni-
-nidazole
-nidine (see -onidine)
-nifur-
-nil (see -azenil)
-nitro/-nitr/-nit/-ni/-ni-
-nixin
(-)nonacog (see -cog)
INN – The use of stems

O
-octakin (see -kin)
-octadekin (see -kin)
(-)octocog (see -cog)
-ol
-olol
-olone (see pred)
onakin (see -kin)
one
-onide
-onidine
-onium (see -ium)
opamine (see -dopa)
-orex
-orph- (see orphan)
orphan
-otermin (see -ermin)
ox/-alox
-oxacin
-oxan(e)
oxanide (see -anide)
oxef (see cef-)
oxepin (see -pine)
oxetine
-oxicam (see -icam)
oxifene (see -ifene)
oxopine (see -pine)

P
-pafant
-pamide
-pamil
-parcin
-parib
-parin
-parinux (see -parin)
-patril/-patrilat (see -tril/-trilat)
pendyl (see -dil)
-penem
perl(u)-
-peridol (see -perone)
-peridone (see -perone)
-perone
-pidem
-pin(e)
piprazole (see -prazole)
pireone (see -spirone)
pirox (see -ox/-alox)
pitant (see -tant)
-plact
-pladib
-planin
-plase (see -ase)
-plasmid (see -gene)
-platin
-plermin (see -ermin)
-plestim (see -stim and -kin)
-plon
-poetin
-porfir
-poride
-pramine
-prazole
-pred
-prenaline (see -terol)
-pressin
-previr (see vir)
-pride
-pril
-prilat (see -pril)
-prim
-pris
-pristin
-profen
-prost
-prostil (see prost)

Q
-quadar
-quine
-quinil (see -azeni)

R
-racetam
-racil
-relin
-relux
-renone
-restat (see -stat)
retin
-ribine
rifa-
-rinone
-rizone (see -izine)
-rolimus (see -imus)
-rozole
-rsen
-rubicin

S
-sal
-salazo- (see sal)
salazine/-salazide (see sal)
salan (see sal)
sartan
-semide
-sermin (see -ermin)
-serod
-serpine
-sertib
-setron
som-
sopine (see -pine)
-spirone
-stat/-stat-
-steine
-ster-
-steride (see -ster-)
-stigmine
-stim
-sulf-?
sulfan

T
-tacept (see cept)
tadine
tant
tapide
taxel
tecan
tepa
tepine (see -pine)
teplase (see -ase)
termin (see -ermin)
terol
-terone
-thiouracil (see -racil)
tiazem
-tide
-tidine
-tide (see -ilide)
tiline (see -triptline)
tinib
tirelin (see -relin)
tizide
tocin
toin
-trakin (see -kin)
-trakinra (see -kinra)
-tredekin (see -kin)
-trexate
-trexed
-tricin
-tril/-trilat
-triptan
-triptyline
-troban
-trodast (see -ast)
trop

U
-uplase (see -ase)
-uridine

V
-vaptan
-vastatin (see -stat)
-vec (see -gene)
-verine
-vin/-vin-
vir
-vircept (see -cept)
-virine (see vir)
-viroc (see vir)
-virsen
-virumab (see mab)
-vos (see fos)
-vudine (see -uridine)

X
-xaban
-xanox (see -ox/-alox)

Y
-yzine (see -izine)

Z
-zafone
-zepine (see -pine)
-zolast (see -ast)
-zone (see -buzone)
-zotan
PART II B

ALPHABETICAL LIST OF COMMON STEMS AND THEIR DEFINITION

A

-abine (see -arabine and -citabine) arabinofuranosyl derivatives; nucleoside antiviral or antineoplastic agents, cytarabine or azactidine derivatives
-ac anti-inflammatory agents, ibufenac derivatives
-acetam (see -racetam) amide type nootrope agents, piracetam derivatives
-actide synthetic polypeptide with a corticotropin-like action
-adol/-adol- analgesics
-adom analgesics, tifluadom derivatives
-afenone antiarrhythmics, propafenone derivatives
-afil inhibitors of phosphodiesterase PDE5 with vasodilator action
-aj- antiarrhythmics, ajmaline derivatives
-al aldehydes
-aldrate antacids, aluminium salts
-alol (see -olol) aromatic ring related to -olols
-alox (see -ox) antacids, aluminium derivatives
-amivir (see vir) neuraminidase inhibitors
-ampanel antagonists of the ionotropic non-NMDA (N-methyl-D-aspartate) glutamate receptors (Namely the AMPA (amino-hydroxymethylisoxazole-propionic acid) and/or KA (kainite antagonist) receptors)
-andr steroids, androgens
-anib angiogenesis inhibitors
-anide -
-anserin serotonin receptor antagonists (mostly 5-HT₂)
-antel anthelminthics (undefined group)
-antrone antineoplastics; anthraquinone derivatives
-apine (see -pine) tricyclic compounds

-(ar)abine arabinofuranosyl derivatives

-arat antiarthritis: substances, acting like clobuzarit and lobenzarit, (mechanism different from anti-inflammatory type substances, e.g. -fenamates or -profens)

-arol anticoagulants, dicoumarol derivatives

-arone -

-arotene arotinoid derivatives

-arte- antimalarial agents, artemisinin related compounds

-ase enzymes

-ast antiasthmatics or antiallergics, not acting primarily as antihistaminics

-astine antihistaminics

-azam (see -azepam) diazepam derivatives

-azenil benzodiazepine receptor antagonists/agonists (benzodiazepine derivatives)

-azepam diazepam derivatives

-azepide cholecystokinin receptor antagonists, benzodiazepine derivatives

-azocine narcotic antagonists/agonists related to 6,7-benzomorphan

-azolam (see -azepam) diazepam derivatives

-azoline antihistaminics or local vasoconstrictors, antazoline derivatives

-azone (see -buzone) anti-inflammatory analgesics, phenylbutazone derivatives

-azosin antihypertensive substances, prazosin derivatives

B

-bacept (see -cept) B-cell activating factor receptors

-bactam β-lactamase inhibitors

-bamate tranquillizers, propanediol and pentanediol derivatives
barb  hypnotics, barbituric acid derivatives
-begron  β3-adrenoreceptor agonists
-benakin (see -kin) interleukin-1 analogues and derivatives
-bendan (see -dan) cardiac stimulants, pimobendan derivatives
-bendazole anthelminthics, tiabendazole derivatives
-bercept (see -cept) target: VEGF receptors
-bermin (see -ermin) vascular endothelial growth factors
-bersat anticonvulsants, benzoylamino-benzpyran derivatives
-betasol (see pred) prednisone and prednisolone derivatives
bol  anabolic steroids
-bradine  sinus node inhibitors
-brate (see -fibrate) clofibrate derivatives
-bufen  non-steroidal anti-inflammatory agents, arylobutanoic acid derivatives
-bulin  antineoplastics; mitotic inhibitor, tubulin binder
-butazone (see -buzone) anti-inflammatory analgesics, phenylbutazone derivatives
-buzone  anti-inflammatory analgesics, phenylbutazone derivatives

C
-caine  local anaesthetics
-cain-  class I antiarrhythmics, procainamide and lidocaine derivatives
calci  vitamin D analogues/derivatives
-capone  catechol-O-methyltransferase (COMT) inhibitors
carbef antibiotics, carbacephem derivatives
-carnil (see -azenil) benzodiazepine receptor antagonists/agonists (carboline derivatives)
castat (see -stat) dopamine-hydroxylase inhibitors
-cavir (see vir)            carbocyclic nucleosides
cef-                      antibiotics, cefalosporanic acid derivatives
cell-/cel-                cellulose derivatives
cell-ate (see cell-/cel-)  cellulose ester derivatives for substances containing acidic residues
-cellose (see cell-/cel-)  cellulose ether derivatives
-cept                      receptor molecules, native or modified (a preceding infix should designate the target)
c-cic                      hepatoprotective substances with a carboxylic acid group
ciclovir (see vir)         antivirals, bicyclic heterocycles compounds
-cidin                     naturally occurring antibiotics (undefined group)
c-ciguan                   guanylate cyclase activators
c-cillide (see -cillin)    antibiotics, 6-aminopenicillanic acid derivatives
c-cillin                   antibiotics, 6-aminopenicillanic acid derivatives
c-cillinam (see -cillin)   antibiotics, 6-aminopenicillanic acid derivatives
c-cilpine (see -pine)      tricyclic compounds
c-cisteine (see -steine)   mucolytics, other than bromhexine derivatives
-citabine                  nucleoside antiviral or antineoplastic agents, cytarabine or azactidine derivatives
-clidine/-clidinium        muscarinic receptor antagonists
-clone                     hypnotic tranquillizers
-cocept (see -cept)        complement receptors
-cog                       blood coagulation factors
c-cogin                    blood coagulation cascade inhibitors
-conazole                  systemic antifungal agents, miconazole derivatives
cort                       corticosteroids, except prednisolone derivatives
-coxib                     selective cyclo-oxygenase inhibitors
-crinat                    diuretics, etacrynic acid derivatives
-crine acridine derivatives
-cromil antiallergics, cromoglicic acid derivatives
-curium (see -ium) curare-like substances
-cycline antibiotics, tetracycline derivatives

danian cardiac stimulants, pimobendan derivatives
-dapsone antimycobacterials, diaminodiphenylsulfone derivatives
-decakin (see -kin) interleukin-10 analogues and derivatives
-denoson adenosine A receptor agonists
-dermin (see -ermin) epidermal growth factors
-dil vasodilators
-dilol (see -dil) vasodilators
-dipine calcium channel blockers, 1,4-dihydropyridine derivatives
-dismase (see -ase) enzymes with superoxide dismutase activity, see -ase item V
-distim (see -stim) combination of two different types of colony stimulating factors
-dodekin (see -kin) interleukin-12 analogues and derivatives
-dopa dopamine receptor agonists, dopamine derivatives, used as antiparkinsonism/prolactin inhibitors
-dox (see -ox/-alox) antibacterials, quinazoline dioxide derivatives
-dralazine antihypertensives, hydrazinephthalazine derivatives
-drine sympathomimetics
-dronic acid calcium metabolism regulator, pharmaceutical aid
-dutant (see -tant) neurokinin NK2 receptor antagonist
-dyl (see -dil) vasodilators
E

-ectin: antiparasitics, ivermectin derivatives
-electin antiparasitics, ivermectin derivatives
-elestat (see -stat): elastase inhibitors
-elvekin (see -kin): interleukin-11 analogues and derivatives
-emcinal: erythromycin derivatives lacking antibiotic activity, motilin agonists
-enicokin (see -kin): interleukin-21 human analogues and derivatives
-entan: endothelin receptor antagonists
(-)eptacog (see -cog): blood coagulation VII

F

-farcept (see -cept): subgroup of interferon receptors
-fenamate (see -fenamic acid): "fenamic acid" derivatives
-fenamic acid: anti-inflammatory, anthranilic acid derivatives
-fenin: diagnostic aids; (phenylcarbamoyl)methyl iminodiacetic acid derivatives
-fenine: analgesics, glafenine derivatives (subgroup of fenamic acid group)
-fentanal: opioid receptor agonists, fentanyl derivatives
-fentrine: inhibitors of phosphodiesterases
-fermin (see -ermin)  fibroblast growth factors
-fiban  fibrinogen receptor antagonists (glycoprotein IIb/IIIa receptor antagonists)
-fibrate  clofibrate derivatives
-filermin (see -ermin)  leukemia-inhibiting factor
-flapon  5-lipoxygenase-activating protein (FLAP) inhibitor
-flurane  halogenated compounds used as general inhalation anaesthetics
-formin  antihyperglycaemics, phenformin derivatives
fos  insecticides, anthelminthics, pesticides etc., phosphorous derivatives
-fosfamide (see -fos)  alkylating agents of the cyclophosphamide group
-fosine (see -fos)  cytostatic
-fovir (see vir)  phosphonic acid derivatives
-fradil  calcium channel blockers acting as vasodilators
-frine (see -drine)  sympathomimetic, phenethyl derivatives
-fungin  antifungal antibiotics
-fylline  N-methylated xanthine derivatives

G

gab  gabamimetic agents
-gado-  diagnostic agents, gadolinium derivatives
-gatran  thrombin inhibitor, antithrombotic agent
-gene  gene therapy products
gest  steroids, progestogens
-gestr- (see estr)  estrogens
-giline  monoamine oxydase (MAO)-inhibitors type B
-gillin  antibiotics produced by Aspergillus strains
gli antihyperglycaemics

-gliiflozin (see gli) sodium glucose co-transporter inhibitors, phlorizin derivatives

-gliptin (see gli) dipeptidyl aminopeptidase–IV inhibitors

-glitazar (see gli) peroxisome proliferator activating receptor-\( \gamma \) (PPAR-\( \gamma \)) agonists

-glitazone (see gli) peroxisome proliferator activating receptor-\( \gamma \) (PPAR-\( \gamma \)) agonists, thiazolidinedione derivatives

-glumide cholecystokinin (CCK) antagonists, antiulcer, anxiolytic agent

-glutide (see -tide) Glucagon-Like Peptide (GLP) analogues

-golide dopamine receptor agonists, ergoline derivatives

-gosivir (see vir) glucoside inhibitors

-gramostim (see -stim) granulocyte macrophage colony stimulating factor (GM-CSF) types substances

-grastim (see -stim) granulocyte colony stimulating factor (G-CSF) type substances

-grel/-grel platelet aggregation inhibitors

guan- antihypertensives, guanidine derivatives

I

-ibine (see -ribine) ribofuranyl-derivatives of the “pyrazofurin” type

-icam anti-inflammatory, isoxicam derivatives

-ifene antiestrogens, clomifene and tamoxifen derivatives

-igetide (see -tide) peptides and glycopeptides

-ilide class III antiarrhythmics, sematilide derivatives

-imex immunostimulants

-imibe acyl CoA: cholesterol acyltransferase (ACAT) inhibitors, antihyperlipidaemics

-imod immunomodulators, both stimulant/suppressive and stimulant

-imus immunosuppressants (other than antineoplastics)

-ine alkaloids and organic bases
INN – The use of stems

-inostat (see stat) histone deacetylase inhibitors
io- iodine-containing contrast media
iod-/io- iodine-containing compounds other than contrast media
-irudin thrombin inhibitors, hirudin derivatives
-isomide class I antiarrhythmics, disopyramide derivatives
-iium quaternary ammonium compounds
-izine (-yzine) diphenylmethyl piperazine derivatives

K
-kacin antibiotics, kanamycin and bekanamycin derivatives (obtained from Streptomyces kanamyceticus)
-kalant potassium channel blockers
-kalim potassium channel activators, antihypertensive
-kef- enkephalin agonists
-kin interleukin type substances
-ki(n)- (see -mab) target: interleukin
-kinra (see -kin) interleukin receptor antagonists
-kiren renin inhibitors

L
-lefacept (see -cept) lymphocyte function-associated antigen 3 receptors
-leukin (see -kin) interleukin-2 analogues and derivatives
-listat (see -stat) gastrointestinal lipase inhibitors
-lubant leukotriene B_4 receptor antagonist
-lukast (see -ast) leukotriene receptor antagonists
M

-mab monoclonal antibodies
-mantadine adamantane derivatives
-mantine (see -mantadine) adamantane derivatives
-mantone (see -mantadine) adamantane derivatives
-mapimod (see -imod) mitogen-activated protein (MAP) kinase inhibitors
-mastat (see -stat) matrix metalloproteinase inhibitors
-meline cholinergic agents (muscarine receptor agonists/partial antagonists used in the treatment of Alzheimer’s disease)
-mer/-mer mercury-containing drugs, antimicrobial or diuretic (deleted from General Principles in List 28 prop. INN)
-mer polymers
-mesine sigma receptor ligands
-mestane aromatase inhibitors
-metacin anti-inflammatory, indomethacin derivatives
-met(h)asone (see pred) prednisone and prednisolone derivatives
-micin antibiotics obtained from various *Micromonospora*
-mifene (see -ifene) antiestrogens, clomifene and tamoxifen derivatives
-milast (see -ast) phosphodiesterase IV (PDE IV) inhibitors
-mito- antineoplastics, nucleotoxic agents (deleted from General Principles in List 24 prop. INN)
-monam monobactam antibiotics
-morelin (see -relin) growth hormone release-stimulating peptides
-mostim (see -stim) macrophage stimulating factors (M-CSF) type substances
-motide (see -tide) immunological agents for active immunization
-motine antivirals, quinoline derivatives
-moxin monoamine oxidase inhibitors, hydrazine derivatives
-mulin antibiotics, pleuromulin derivatives
-mustine antineoplastic, alkylating agents, (β-chloroethyl)amine derivatives
-mycin antibiotics, produced by *Streptomyces* strains (see also -kacin)

**N**

-nab cannabinoid receptors agonists
-nabant cannabinoid receptors antagonists
-nacept (see -cept) interleukin-1 receptors
-nakin (see -kin) interleukin-1 analogues and derivatives
-nakinra (see -kin) interleukin-1 receptor antagonists

-nal- opioid receptor antagonists/agonists related to normorphine
-naritide (see -tide) peptides and glycopeptides

-navir (see vir) Human Immunodeficiency Virus (HIV) protease inhibitors
-nermin (see -ermin) tumour necrosis factor
-nercept (see -cept) tumour necrosis factor receptors

-nertant (see -tant) neurotensin antagonists
-netant (see -tant) neurokinin NK₃ receptor antagonists
-nicate (see nico-) antihypercholesterolaemic and/or vasodilating nicotinic acid esters
-nicline nicotinic acetylcholine receptor partial agonists / agonists

-nico-/nic-/ni- nicotinic acid or nicotinoyl alcohol derivatives

-nidazole antiprotozoals and radiosensitizers, metronidazole derivatives

-nidine (see -onidine) antihypertensives, clonidine derivatives

-nifur- 5-nitrofuran derivatives

-nil (see -azenil) benzodiazepine receptor antagonists/agonists (benzodiazepine derivatives)

-nitro-/nitr-/nit-/ni-/ni- NO₂ - derivatives

-nixin anti-inflammatory, anilinonicotinic acid derivatives
(-)nonacog (see -cog) blood factor IX

O

coctakin (see -kin) interleukin-8 analogues and derivatives
-octadekin (see -kin) interleukin-18 human analogues and derivatives
(-)octocog (see -cog) blood factor VIII

-ol for alcohols and phenols (deleted from General Principles in 14th Report)

-olol β-adrenoreceptor antagonists

-olone (see pred) steroids other than prednisolone derivatives

-onakin (see -kin) interleukin-1 analogues and derivatives

-one ketones

-onide steroids for topical use, acetal derivatives

-onidine antihypertensives, clonidine derivatives

-onium (see -ium) quaternary ammonium compounds

-opamine (see -dopa) dopaminergic agents dopamine derivatives used as cardiac stimulant/antihypertensives/diuretics

-orex anorexics

-orph- (see orphan) opioid receptor antagonists/agonists, morphinan derivates

-orphan opioid receptor antagonists/agonists, morphinan derivates

-otermin (see -ermin) bone morphogenetic proteins

-ox/-alox antacids, aluminium derivatives

-oxacin antibacterials, nalidixic acid derivatives

-oxan(e) benzodioxane derivatives

-oxanide (see -anide) antiparasitics, salicylanilides and analogues

-oxef (see cef-) antibiotics, oxacefalosporanic acid derivatives

-oxepin (see -pine) tricyclic compounds
-oxetine serotonin and/or norepinephrine reuptake inhibitors, fluoxetine derivatives

-oxicam (see -icam) anti-inflammatory, isoxicam derivatives

-oxifene (see -ifene) antiestrogens, clomifene and tamoxifen derivatives

-oxopine (see -pine) tricyclic compounds

P

-pafant platelet-activating factor antagonists

-pamide diuretics, sulfamoylbenzoic acid derivatives (could be sulfamoylbenzamide)

-pamil calcium channel blocker, verapamil derivatives

-parcin for glycopeptide antibiotics

-parib poly-ADP-Ribose polymerase inhibitors

-parin heparin derivatives including low molecular mass heparins

-parinux (see -parin) synthetic heparinoids

-pendyl (see -dil) vasodilators

-penem analogues of penicillanic acid antibiotics modified in the five-membered ring

-perfl(u)- perfluorinated compounds used as blood substitutes and/or diagnostic agents

-peridol (see -perone) antipsychotics, haloperidol derivatives

-peridone (see -perone) antipsychotics, risperidone derivatives

-perone tranquillizers, neuroleptics, 4'-fluoro-4-piperidinobutyrophenone derivatives

-pidem hypnotics/sedatives, zolpidem derivatives

-pin(e) tricyclic compounds

-piprazole (see -prazole) psychotropics, phenylpiperazine derivatives

-pirone (see -spirone) anxiolytics, buspirone derivatives

-pirox (see -ox/-alox) antimycotic pyridone derivatives
-pitant (see -tant) neurokinin NK₁ (substance P) receptor antagonist
-plact platelet factor 4 analogues and derivatives
-pladib phospholipase A₂ inhibitors
-planin antibacterials (Actinoplanes strains)
-plase (see -ase) enzymes
-plasmid (see -gene) gene therapy products
-platin antineoplastic agents, platinum derivatives
-plermin (see -ermin) platelet-derived growth factor
-plestim (see -stim and -kin) interleukin-3 analogues and derivatives
-plon imidazopyrimidine or pyrazolopyrimidine derivatives, used as anxiolytics, sedatives, hypnotics
-poetin erythropoietin type blood factors
-porfin benzoporphyrin derivatives
-poride Na⁺/H⁺ antiport inhibitor
-pramine substances of the imipramine group
-prazole antiulcer, benzimidazole derivatives
-pred prednisone and prednisolone derivatives
-prenaline (see -terol) bronchodilators, phenethyamine derivatives
-pressin vasoconstrictors, vasopressin derivatives
-previr (see vir) Hepatitis Virus C (HVC) protease inhibitors
-pride sulpiride derivatives
-pril angiotensin-converting enzyme inhibitors
-prilat (see -pril) angiotensin-converting enzyme inhibitors
-prim antibacterials, trimethoprim derivatives
-pris- steroidal compounds acting on progesterone receptors (excluding -gest- compounds)
-pristin antibacterials, pristinamycin derivatives
-profen anti-inflammatory agents, ibuprofen derivatives
prost prostaglandins
-prostil (see prost) prostaglandins, anti-ulcer

Q
-quidar drugs used in multidrug resistance, quinoline derivatives
-quin(e) quinoline derivatives (deleted from General Principles in List 28 prop. INN)
-quinil (see -azenil) benzodiazepine receptor agonists, also partial or inverse (quinoline derivatives)

R
-racetam amide type nootrope agents, piracetam derivatives
-racil uracil type antineoplastics
-relin pituitary hormone-release stimulating peptides
-relix pituitary hormone-release inhibiting peptides
-renone aldosterone antagonists, spironolactone derivates
-restat (see -stat) aldose reductase inhibitors
retin retinol derivatives
-ribine ribofuranyl-derivatives of the "pyrazofurin" type
rifa- antibiotics, rifamycin derivatives
-rinone cardiac stimulants, amrinone derivatives
-rizine (see -izine) antihistaminics/cerebral (or peripheral) vasodilators
-rolimus (see -imus) immunosuppressants, rapamycin derivatives
-rozole aromatase inhibitors, imidazole-triazole derivatives
-rsen antisense oligonucleotides
-rubicin antineoplastics, daunorubicin derivatives
S

sal salicylic acid derivatives
salazo- phenylazosalicylic acid derivatives antibacterial
-salan brominated salicylamide derivatives disinfectant
-sartan angiotensin II receptor antagonists, antihypertensive (non-peptidic)
-semide diuretics, furosemide derivatives
-sermin (see -ermin) insulin-like growth factors
-serod serotonin receptor antagonists and partial agonists
-serpine derivatives of Rauwolfia alkaloids
-sertib serine/threonine kinase inhibitors
-setron serotonin receptor antagonists (5-HT3) not fitting into other established groups of serotonin receptor antagonists
-som- growth hormone derivatives
-sopine (see -pine) tricyclic compounds
-spirone anxiolytics, buspirone derivatives
-stat/-stat- enzyme inhibitors
-steine mucolytics, other than bromhexine derivatives
-ster- androgens/anabolic steroids
-steride (see -ster-) androgens/anabolic steroids
-stigmine acetylcholinesterase inhibitors
-stim colony stimulating factors
-sulfa- anti-infectives, sulfonamides
-sulfan antineoplastic, alkylating agents, methanesulfonates

T
-tacept (see -cept) cytotoxic T lymphocyte-associated antigen 4 (CTLA-4) receptors
-tadine tricyclic histamine-H₁ receptor antagonists, tricyclic compounds
-tant neurokinin (tachykinin) receptor antagonists
-tapide microsomal triglyceride transfer protein (MTP) inhibitors
-taxel antineoplastics; taxane derivatives
-tecan antineoplastics, topoisomerase I inhibitors
-tepa antineoplastics, thiotepa derivatives
-tepine (see -pine) tricyclic compounds
-teplase (see -ase) tissue type plasminogen activators, see -ase item VI
-tercept (see -cept) transforming growth factors receptors
-termin (see -ermin) transforming growth factor
-terol bronchodilators, phenethylamine derivatives
-terone antiandrogens
-thiouracil (see -racil) uracil derivatives used as thyroid antagonists
-tiazem calcium channel blockers, diltiazem derivatives
-tide peptides and glycopeptides (for special groups of peptides see -actide, -pressin, -relin, -tocin)
-tidine histamine-H₂-receptor antagonists, cimetidine derivatives
-tilide (see -ilide) class III antiarrhythmics, sematilide derivatives
-tiline (see -triptyline) antidepressants, dibenzo[a,d]cycloheptane or cyclopheptene derivatives
-tinib tyrosine kinase inhibitors
-tirelin (see -relin) thyrotropin releasing hormone analogues
-tizide diuretics, chlorothiazide derivatives
-tocin oxytocin derivatives
-toin antiepileptics, hydantoin derivatives
-trakin (see -kin) interleukin-4 analogues and derivatives
-trakinra (see -kinra) interleukin-4 receptor antagonists
-tredekin (see -kin) interleukin-13 analogues and derivatives

-trexate folic acid analogues

-trexed antineoplastics; thymidilate synthetase inhibitors

-tricin antibiotics, polyene derivatives

-tril/trilat endopeptidase inhibitors

-triptan serotonin (5HT₁) receptor agonists, sumatriptan derivatives

-triptane antineoplastics; thymidilate synthetase inhibitors

-triptene serotonin (5HT₁) receptor agonists, sumatriptan derivatives

-triptine antineoplastics; thymidilate synthetase inhibitors

-troban thromboxane A₂-receptor antagonists; antithrombotic agents

-trodast (see -ast) thromboxane A₂-receptor antagonists, antithrombotics

-trop atropine derivatives

U

-uplase (see -ase) urokinase type plasminogen activator, see -ase item VII

-ur (see -uridine) uridine derivatives used as antiviral agents and as antineoplastics

-uridine uridine derivatives used as antiviral agents and as antineoplastics

V

-vaptan vasopressin receptor antagonists

-vastatin (see -stat) antihyperlipidaemic substances, HMG CoA reductase inhibitors

-vec (see -gene) gene therapy product

-verine spasmytics with a papaverine-like action

-vin/-vin- vinca alkaloids

-vir antivirals (undefined group)

-vircept (see -cept) antiviral receptors

-virine (see vir) non-nucleoside reverse transcriptase inhibitors (NNRTI)

-viroc (see -vir) CCR5 (Chemokine CC motif receptor 5) receptor antagonists
<table>
<thead>
<tr>
<th>Stem</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-virsen</td>
<td>antisense oligonucleotides</td>
</tr>
<tr>
<td>-vos (see fos)</td>
<td>insecticides, anthelminthics, pesticides etc., phosphorus derivatives</td>
</tr>
<tr>
<td>-vudine (see -uridine)</td>
<td>uridine derivatives used as antiviral agents and as antineoplastics</td>
</tr>
</tbody>
</table>

**X**

- xaban | blood coagulation factor $X_A$ inhibitors, antithrombotics |
- xanox (see -ox/-alox) | anti-allergics, tixanox group |

**Y**

- yzine (see -izine) | diphenylmethyl piperazine derivatives |

**Z**

- zafone | alozafone derivatives |
- zepine (see -pine) | tricyclic compounds |
- zolast (see -ast) | leukotriene biosynthesis inhibitors |
- zone (see -buzone) | anti-inflammatory analgesics, phenylbutazone derivatives |
- zotan | $5$-$HT_{1A}$ receptor agonists / antagonists acting primarily as neuroprotectors |

**Acknowledgements**

The INN Secretariat extends its thanks to Dr R. Boudet-Dalbin, France, for the graphic representations of the chemical formulae in this document.
### PART III

Stem classification with corresponding examples of stems and their definition

<table>
<thead>
<tr>
<th>Stem</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A000</strong> CNS DEPRESSANTS</td>
<td></td>
</tr>
<tr>
<td><strong>A100</strong> General anaesthetics</td>
<td></td>
</tr>
<tr>
<td><strong>A110</strong> General anaesthetics, volatile</td>
<td>halogenated compounds used as general inhalation anaesthetics</td>
</tr>
<tr>
<td><strong>A120</strong> General anaesthetics, other</td>
<td></td>
</tr>
<tr>
<td><strong>A200</strong> Hypnotics - sedatives</td>
<td></td>
</tr>
<tr>
<td><strong>A210</strong> Barbiturates</td>
<td>hypnotics, barbituric acid derivatives</td>
</tr>
<tr>
<td><strong>A220</strong> Hypnotic sedatives, other</td>
<td>hypnotic tranquillizers</td>
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<tr>
<td><strong>A220</strong></td>
<td>imidazopyrimidine or pyrazolopyrimidine derivatives, used as anxiolytics, sedatives, hypnotics</td>
</tr>
<tr>
<td><strong>A230</strong> Monoureids, hypnotic sedatives</td>
<td></td>
</tr>
<tr>
<td><strong>A240</strong> Chlornal derivatives, hypnotic sedatives</td>
<td></td>
</tr>
<tr>
<td><strong>A300</strong> Centrally acting voluntary muscle tone modifying drugs</td>
<td></td>
</tr>
<tr>
<td><strong>A310</strong> Anticonvulsants</td>
<td>anticonvulsants, benzoylamino-benzpyran derivatives</td>
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<td><strong>A311</strong> Hydantoins, anticonvulsants</td>
<td>antiepileptics, hydantoin derivatives</td>
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<tr>
<td><strong>A312</strong> Acetylureas, anticonvulsants</td>
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<tr>
<td><strong>A313</strong> Oxazolidinediones, anticonvulsants</td>
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<tr>
<td><strong>A314</strong> Succinimides, anticonvulsants</td>
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<tr>
<td><strong>A315</strong> Barbiturates, anticonvulsants</td>
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<tr>
<td><strong>A316</strong> Anticonvulsants, other</td>
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<tr>
<td><strong>A320</strong> Central anticholinergics</td>
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<tr>
<td>A330</td>
<td>Centrally acting voluntary-muscle relaxants</td>
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<tr>
<td>A400</td>
<td>Analgesics</td>
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<td>A410</td>
<td>Narcotic analgesics</td>
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<td>-adol or -adol-</td>
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Class I antiarrhythmics, procainamide and lidocaine derivatives (antifibrillants with local anaesthetic activity)
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<td>Bulk forming drugs</td>
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</tr>
<tr>
<td>S550</td>
<td>Antibacterial/other</td>
<td>-citabine</td>
</tr>
<tr>
<td>S550</td>
<td>-oxacin</td>
<td>antibacterials, nalidixic acid derivatives</td>
</tr>
<tr>
<td>------</td>
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<tr>
<td>S550</td>
<td>-prim</td>
<td>antibacterials, trimethoprim derivatives</td>
</tr>
<tr>
<td>S600</td>
<td>Antibiotics (except antineoplastic antibiotics)</td>
<td>-cidin</td>
</tr>
<tr>
<td>S600</td>
<td>-fungin</td>
<td>antifungal antibiotics</td>
</tr>
<tr>
<td>S600</td>
<td>-gillin</td>
<td>antibiotics produced by <em>Aspergillus</em> strains</td>
</tr>
<tr>
<td>S600</td>
<td>-monam</td>
<td>monobactam antibiotics</td>
</tr>
<tr>
<td>S600</td>
<td>-mycin</td>
<td>antibiotics, produced by <em>Streptomyces</em> strains (see also -kacin)</td>
</tr>
<tr>
<td>S600</td>
<td>-parcin</td>
<td>for glycopeptide antibiotics</td>
</tr>
<tr>
<td>S600</td>
<td>-penem</td>
<td>analogues of penicillanic acid antibiotics modified in the five-membered ring</td>
</tr>
<tr>
<td>S600</td>
<td>-pristin</td>
<td>antibacterials, pristinamycin derivatives</td>
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<tr>
<td>S610</td>
<td>Antibiotics acting on the bacterial cell wall</td>
<td>-carbef</td>
</tr>
<tr>
<td>S610</td>
<td>cef-</td>
<td>antibiotics, cefalosporanic acid derivatives</td>
</tr>
<tr>
<td>S610</td>
<td>-cillin</td>
<td>antibiotics, 6-aminopenicillanic acid derivatives</td>
</tr>
<tr>
<td>S610</td>
<td>-oxef</td>
<td>see cef-; antibiotics, oxacefalosporanic acid derivatives</td>
</tr>
<tr>
<td>S620</td>
<td>Antibiotics affecting cell membrane and with detergent effect</td>
<td>-tricin</td>
</tr>
<tr>
<td>S630</td>
<td>Antibiotics affecting protein synthesis</td>
<td>-cycline</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td>Example</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
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<tr>
<td>S630</td>
<td>Antibiotics affecting nucleic acid metabolism</td>
<td>-kacin</td>
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<td>S640</td>
<td>Antibiotics-action unclassified (including β-lactamase inhibitors)</td>
<td>rifa-</td>
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<td>S650</td>
<td>Antibiotics-action unclassified (including β-lactamase inhibitors)</td>
<td>-bactam</td>
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<td>Antibiotics-action unclassified (including β-lactamase inhibitors)</td>
<td>-micin</td>
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<td>S700</td>
<td>Immunomodulators and immunostimulants (incl. gamma globulins)</td>
<td>imex</td>
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<td>-imod</td>
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<td>-imus</td>
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<td>S700</td>
<td>Immunomodulators and immunostimulants (incl. gamma globulins)</td>
<td>-kin</td>
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<td>S700</td>
<td>Immunomodulators and immunostimulants (incl. gamma globulins)</td>
<td>-kinra</td>
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<td>Immunomodulators and immunostimulants (incl. gamma globulins)</td>
<td>-mab</td>
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<td>Immunomodulators and immunostimulants (incl. gamma globulins)</td>
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<td>S710</td>
<td>Interferons and immunomodulators</td>
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<tr>
<td>T000</td>
<td>LOCALLY ACTING AGENTS (INCL. DERMATOLOGIC AND INTERNALLY USED DRUGS)</td>
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<tr>
<td>T100</td>
<td>Locally acting externally-applied agents</td>
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</tr>
<tr>
<td>Code</td>
<td>Category</td>
<td>Description</td>
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<tr>
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<tr>
<td>T110</td>
<td>Vasodilators (external) -</td>
<td>rubefaciens</td>
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<tr>
<td>T200</td>
<td>Locally acting internally-applied agents</td>
<td></td>
</tr>
<tr>
<td>T210</td>
<td>Adsorbents, astringents</td>
<td></td>
</tr>
<tr>
<td>T220</td>
<td>Lubricant cathartics</td>
<td></td>
</tr>
<tr>
<td>T230</td>
<td>Irritant cathartics</td>
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<tr>
<td>T240</td>
<td>Gastro-intestinal anti-infectives, non-resorbed</td>
<td></td>
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<tr>
<td>T250</td>
<td>Saponins</td>
<td></td>
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<tr>
<td>T260</td>
<td>Detergents</td>
<td></td>
</tr>
<tr>
<td>T300</td>
<td>Intravaginal contraceptives</td>
<td></td>
</tr>
<tr>
<td>U000</td>
<td>MISCELLANEOUS DRUGS</td>
<td>-ermin: growth factors; -dermin: epidermal growth factors; -fermin: fibrino-blast growth factors; -nermin: tumour necrosis factor; -sermin: insulin-like growth factors</td>
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<tr>
<td>U000</td>
<td></td>
<td>gado- diagnostic agents, gadolinium derivatives</td>
</tr>
<tr>
<td>U100</td>
<td>Diagnostic aids</td>
<td>-fenin diagnostic aids; (phenyl-carbamoyl)methyl iminodiacetic acid derivatives</td>
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<tr>
<td>U110</td>
<td>Radiocontrast media</td>
<td>io- iodine-containing contrast media</td>
</tr>
<tr>
<td>U110</td>
<td></td>
<td>-io- or iod- iodine-containing compounds other than contrast media</td>
</tr>
<tr>
<td>U120</td>
<td>Diagnostic aids, other</td>
<td></td>
</tr>
<tr>
<td>U130</td>
<td>Diagnostic radioisotopes</td>
<td></td>
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<tr>
<td>U200</td>
<td>Chelating agents, detoxicants, etc.</td>
<td></td>
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<tr>
<td>U210</td>
<td>Alcohol deterrents</td>
<td></td>
</tr>
<tr>
<td>U300</td>
<td>Anti-inflammatory agents</td>
<td>-lubant phospholipase A2 inhibitors</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td>Examples</td>
</tr>
<tr>
<td>-------</td>
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<td>U310</td>
<td>Non-antipyretic antirheumatics</td>
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<td>U320</td>
<td>Anti-inflammatory agents, other</td>
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<td>U400</td>
<td>Pharmaceutical adjuncts</td>
<td>cell- or cel- cellulose derivatives; (cell-ate and -cellose)</td>
</tr>
<tr>
<td>U400</td>
<td></td>
<td>-dronic acid calcium metabolism regulator, pharmaceutical aid</td>
</tr>
<tr>
<td>V000</td>
<td>UNCLASSIFIED PHARMACOLOGICAL MECHANISMS</td>
<td></td>
</tr>
<tr>
<td>V100</td>
<td>Intrauterine contraceptive device</td>
<td></td>
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<td>V200</td>
<td>Medicinal plants</td>
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<tr>
<td>V300</td>
<td>Homoeopathic preparations</td>
<td></td>
</tr>
<tr>
<td>W000</td>
<td>ENZYMES AND VARIOUS</td>
<td>-ase enzymes; -dismase, -teplase, -uplase</td>
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<tr>
<td>W000</td>
<td></td>
<td>-pladib phospholipase A₂ inhibitors</td>
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<tr>
<td>W000</td>
<td></td>
<td>-stat enzyme inhibitors</td>
</tr>
<tr>
<td>Y000</td>
<td>VETERINARY DRUGS</td>
<td>-nidazole antiprotozoals and radiosensitizers, metronidazole derivatives</td>
</tr>
</tbody>
</table>
PART IV
ALPHABETICAL LIST OF STEMS TOGETHER WITH CORRESPONDING INNS

-abine  see -arabine, -citabine

-ac (x)  anti-inflammatory agents, ibufenac derivatives

A.4.2.0  (USAN: anti-inflammatory agents (acetic acid derivatives))

\[
\begin{align*}
\text{H}_2\text{C} & \quad \text{CH}_3 \\
& \quad \text{COOH}
\end{align*}
\]

(a)  -clofenac: aceclofenac (52), alclofenac (23), diclofenac (28), fenclofenac (30)
    -dolac: dexpemedolac (71), etodolac (45), pemedolac (58)
    -fenac: amfenac (38), bromfenac (55), furofenac (40), ibufenac (14), lexofenac (38), nepafenac (78)
    -zolac: bufezolac (39), isofezolac (39), lonazolac (34), mofezolac (64), pirazolac (43), trifezolac (34)
    others: anirolac (52), bendazac (22), cinfenoac (41), clidanac (39), clofurac (42), clopirac (30), eltenac (53), felbinac (54), fenclorac (33), fentiazac (32), isoxepac (37), ketorolac (51), oxepinac (36), oxindanac (54), (quinclorac, ISO name for a herbicide), sulindac (33), tianafac (31), tifurac (57), tiopinac (40), zomepirac (37)

(b)  bufexamac (20) (anti-inflammatory; acethydroxamic acid group instead of acetic acid group)

(c)  amtolmetin guacil (65), clamidoxic acid (17), fenclozic acid (22), metiazinic acid (20), prodolic acid (29), tolmetin (23)

-acetam  see -racetam

-actide  synthetic polypeptides with a corticotropin-like action

Q.1.1.1  (USAN: synthetic corticotropins)

(a)  alsactide (45), codactide (24), giractide (29), norleusactide (18), seractide (31),
    tetracosactide (18), tosactide (24), tricosactide (44), tridecactide (97)
INN – The use of stems

BAN, USAN

-adol (x) analgesics (14th Report, 1967)

-adol-

A.4.1.0

A.4.2/3.0 (USAN: analgesics (mixed opiate receptor agonists/antagonists))

(a) A.4.1.0: acetylmethadol (5), alimadol (39), alphacetylmethadol (5), alphamethadol (5), axomadol (87), betacetylmethadol (5), betamethadol (5), indantadol (94), levacetylmethadol (27), noracymethadol (12), tapentadol (87)

A.4.2/3.0: apadoline (74), asimadoline (74), befradol (99), bromadoline (49), ciprefadol (41), cirmadol (39), cloracetadol (16), dibusadol (24), dimenoxadol (7), diproxadol (34), enadoline (68), faxeladol (97), filenadol (47), flumexadol (36), fluradoline (48), gadoxadol (48), insalmadol (92), levonantradol (43), lorcinadol (57), moxadalen (45), (deleted in List 48: moxifadol (47)), myfadol (17), nafoxadol (50), nantradol (42), nebacadol (56), oxapadol (40), picenadol (47), pinadoline (50), pipradimadol (42), pipramadol (42), pravadoline (60), vadeline (60), profadol (20), radolmidine (82), ruzadalone (71), spiradoline (53), tazadolene (52), tolpadol (48), tramadol (22), veradoline (47)

(b) alfadolone (27), hexapradol (12) (CNS stimulant), nadolol (34), quinestradol (15) (estrogenic)

(c) A.4.1.0: dimephentanol (5)

-adom analgesics, tifluadom derivatives

A.4.3.0

(a) lufuradom (50), tifluadom (48)

-afenone antiarrhythmics, propafenone derivatives

H.2.0.0

(a) alprafenone (62), berlafenone (63), diprafenone (48), etafenone (19), propafenone (29)
-afil  inhibitors of phosphodiesterase PDE5 with vasodilator action

F.2.0.0  (USAN: PDE5 inhibitors)

(a)  avanafil (92), beminafil (90), dasantafil (91), gisadenafil (101), lodenafil carbonate (94), mirodenafil (95), sildenafil (75), tadalafil (85), udenafil (93), vardenafil (82)

-aj-  antiarrhythmics, ajmaline derivatives

H.2.0.0

(a)  detajmium bitartrate (34), lorajmine (34), prajmalium bitartrate (23)

-al (d)  aldehydes

(deleted from General Principles in 14th Report)

-aldrate  antacids, aluminium salts

N.5.2.0

(a)  carbadrate (53), potassium glucaldrate (14), magaldrate (49), simaldrate (15), sodium glucaspaldrate (17)

algeldrate (15), almadrade sulfate (15), almagodrate (52)

(c)  alexitol sodium (45), almagate (41), almasilate (43), dosmalfate (75), glucalox (13), hydrotalcite (23), lactalfe (53), sucralox (13)

-alol  see -olol

-alox  see -ox

-amivir  see -vir
-ampanel antagonists of the ionotropic non-NMDA (N-methyl-D-aspartate) glutamate receptors (Namely the AMPA (amino-hydroxymethyl-isoxazole-propionic acid) and/or KA (kainite antagonist) receptors)

B.0.0.0 (USAN: ionotropic non-NMDA glutamate receptors (AMPA and/or KA receptors) antagonists)

(a) becampanel (90), dasolampanel (105), fanapanal (80), irampanel (82), perampanel (97), selurampanel (104), talampanel (80), tezampanel (95), zonampanel (85)

andr (d) steroids, androgens

Q.2.3.0 (USAN: -andr- androgens)

(a) i. _andr_: androstanelone (4), methandriol (1), nandrolone (22), norethandrolone (6), ovandrotone albumin (52), silandroine (18)

ii. _-stan- (d): _-stan- (d): androstanelone (4), drostanolone (13), epitiostanol (31), mestanolone (10), stanozolol (18), epostane (51) (contraceptive)

iii. _-ster- (d): calusterone (23), cloxotestosterone (12), fluoxymesterone (6), mesterolone (15), methyltestosterone (4), oxymesterone (12), penmesterol (14), prasterone (23), testosterone (4), testosterone ketolaurate (16), tiomesterone (14)

(b) i. _andr_: oxandrolone (12), propetandroine (13)

ii. _ster_: aldosterone (6), bolasterone (13), dihydrotachysterol (1), dimethisterone (8), ethisterone (4), norethisterone (6), norvinisterone (6), stercuronium iodide (21) (neuromuscular blocking agent)

(c) metandienone (12), oxymetholone (11), trestolone (25) (antineoplastic androgen)

-anib angiogenesis inhibitors

L.0.0.0

(a) beloranib (100), bevasiranib (99), brivanib alaninate (97), cediranib (95), crenolanib (105), motesanib (97), nintedanib (105), linifanib (102), pazopanib (94), pegaptanib (88), pegdinetanib (103), semaxanib (85), tivozanib (102), toceranib (100), vandetanib (91), vatalanib (84)
-anide

-etanide  diuretics, piretanide derivatives

N.1.2.0  (USAN: diuretics (piretanide type))

(a)  bumetanide (24), piretanide (33)
(c)  besunide (30)

-oxanide  antiparasitics, salicylanilides and analogues

S.3.0.0  (USAN: antiparasitics (salicylanilide derivatives))

(a)  bromoxanide (31), clioxanide (19), rafoxanide (24)
      thioanalogues: brotianide (24)
      related: diloxanide (8), nitazoxanide (45)
(b)  closantel (36), flurantel (25), niclosamide (13), resorantel (23), salantel (29)
(c)  oxyclozanide (16)

Other –anides: aurothioglycanide (1) (antiarthritic; gout-remedy), ceforanide (39) (antibiotic), oglufanide (86) (immunomodulator), polihexanide (24) (antibacterial), tiprostanide (48) (antihypertonic)
-anserin  serotonin receptor antagonists (mostly 5-HT₂)

C.7.0.0 (USAN: serotonin 5-HT₂ receptor antagonists)

(a) adatanserin (70), altanserin (50), blonanserin (76), butanserin (51), eplivanserin (80), fananserin (69), fibanserin (75), iferanserin (89), ketanserin (46), lidanserin (62), nelotanserin (101), pelanserin (57), pimavanserin (97), pruvanserin (90), seganserin (56), trelanserin (97), tropanserin (55), volinanserin (95)

(b) serotonin receptor antagonists, psychoactive: cinanserin (17), glemanserin (68), mianserin (20), ritanserin (51)

-antel  anthelminthics (undefined group)

S.3.1.0

(a) amidantel (40), carbantel (35), closantel (36), derquantel (99), epsiprantel (57), febantel (38), flurantel (25), monepantel (98), morantel (22), oxantel (31), pexantel (22), praziquantel (34), pyrantel (17), resorantel (23), salantel (29), zilantel (33), antelmicin (15)

-antrone  antineoplastics; anthraquinone derivatives

L.0.0.0/ (USAN: -antrone as above, and -(x)antrone with following definition: antineoplastics, mitoxantrone derivatives aza-anthracenedione class of antitumor agents)

L.5.0.0

(a) ametantrone (45), banoxantrone (90), butantrone (49), ledoxantrone (76), losoxantrone (68), mitoxantrone (44), nortopixantrone (87), piroxantrone (59), pixantrone (89), sepantronium bromide (105), teloxantrone (68), topixantrone (87)

-apine  see -pine

-(ar)abine  arabinofuranosyl derivatives

L.4.0.0/ (USAN: -arabine: antineoplastic (arabinofuranosyl derivatives))

S.5.3.0

(a) clofarabine (90), cytarabine (14), fazarabine (56), fludarabine (48), nelarabine (80), vidarabine (23)
See also the stem -citabine: ancitabine (36), apricitabine (95), capecitabine (73), decitabine (61), dexelvucitabine (95), elvucitabine (89), emtricitabine (80), enocitabine (46), fiacitabine (59), flurocitabine (38), galocitabine (65), gemcitabine (62), ibacitabine (57), mericitabine (104), sapacitabine (94), tezacitabine (84), torcitabine (87), troxacitabine (81), valopicitabine (93), valtorcitabine (90), zalcitabine (66)

(c) S.5.3.0: ribavirin (31), taribavirin (95)

-arit antiarthritic substances, acting like clobuzarit and lobenzarit (mechanism different from anti-inflammatory type substances, e.g. -fenamates or -profens)

A.4.2.0 (USAN: antirheumatic (lobenzarit type))

(a) actarit (62), bindarit (64), clobuzarit (44), lobenzarit (46), romazarit (60)

(c) tarenflurbil (97)

-arol (d) anticoagulants, dicoumarol derivatives

I.2.1.0 (USAN: anticoagulants (dicoumarol type))

(a) acenocoumarol (6), clocoumarol (31), coumetarol (13), dicoumarol (23), tioclomarol (31), xylocoumarol (15)

(b) cloridarol (29) (coron. vasodil.), fluindarol (16) (anticoag. of indonedione-type)

(c) diarbarone (15), ethyl biscoumacetate (4), phenprocoumon (11), tecarfarin (101), warfarin (23)

-arone

(USAN: antiarrhythmics)

amiodarone (16) (antiarrhythmic), benzarone (13), benz bromarone (13) (uricosuric), benziodarone (11), brinazaron (64) (calcium channel blocker), buccromarone (48) (antiarrhythmic), budiodarone (101), celivarone (94), diarbarone (15), dronedarone (75)
(antianginal, antiarrhythmic), etabenzarone (17), fantofarone (65) (calcium channel blocker), furidarone (19), inicare (27), mecinarone (30), pyridarone (16), rilozarone (58)

- arotene  
  **arotinoid derivatives**

P.1.0.0  
(USAN: -arot-: arotinoids, and -arotene: arotinoid derivatives)

(a) adarotene (100), amsilarotene (98), betacarotene (38), bexarotene (80), etarotene (64), linarotene (65), mofarotene (70), palovarotene (99), sumarotene (64), tamibarotene (73), tazarotene (72), temarotene (54)

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arte-  
**antimalarial agents, artemisinin related compounds**

S.3.3.0

(a) arteflene (70), artemether (61), artemisone (95), artemisinin (56), artemotil (80), artemimol (81), arterolane (97), artesunate (61)

---

- ase  
**enzymes**

W.0.0.0  
(a) agalsidase alfa (84), agalsidase beta (84), alglucerase (68), alglucosidase alfa (91), brinase (22), bucelipase alfa (95), cocrboxylase (1), dornase alfa (70), eufauserase (84), galsulfase (92), glucarpidase (92), hyalosidase (50), hyaluronidase (1), idursulfase (90), kallidinogenase (22), ocrase (28), pegaspargase (64), penicillinase (10), promelase (47), rizolipase (22), serrapeptase (31), sfericase (40), streptodornase (6), streptokinase (6), tilactase (50), urokinase (48)

(c) batroxobin (29), bromelains (18), chymopapain (26), chymotrypsin (10), defibrotide (44), fibrinolysin (human) (10), orgotein (31), sutilains (18), ubidecarenone (48)

Classification of enzymes

I  
**proteinase**

(a) with -ase suffix:

<table>
<thead>
<tr>
<th>INN</th>
<th>origin</th>
<th>use, action</th>
</tr>
</thead>
<tbody>
<tr>
<td>brinase (22)</td>
<td><em>Aspergillus oryzae</em></td>
<td>fibrinolytic</td>
</tr>
<tr>
<td>kallidinogenase (22)</td>
<td>pancreas or urine of mammals</td>
<td>splitting kinin, kallidin from kininogen (vasodilator)</td>
</tr>
<tr>
<td>Enzyme</td>
<td>Source</td>
<td>Function</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>ocrase (28)</td>
<td><em>Aspergillus ochraceus</em></td>
<td>fibrinolytic (topically: cleaning wounds)</td>
</tr>
<tr>
<td>pegaspargase</td>
<td>(64)</td>
<td>asparaginase</td>
</tr>
<tr>
<td>promelase</td>
<td>(46)</td>
<td><em>Aspergillus melleus</em> proteinase (chronic bronchitis)</td>
</tr>
<tr>
<td>serrapeptase</td>
<td>(31)</td>
<td><em>Serratia sp. E15</em> proteinase (chronic paranasal sinusitis etc.)</td>
</tr>
<tr>
<td>sfericase</td>
<td>(40)</td>
<td><em>Bacillus sphaericus</em> proteinase (chronic paranasal sinusitis etc.)</td>
</tr>
<tr>
<td>streptokinase</td>
<td>(6)</td>
<td><em>Streptococcus haemolyticus</em> changing plasminogen into plasmine (activator of fibrinolysis)</td>
</tr>
<tr>
<td>urokinase</td>
<td>(48)</td>
<td>human origin plasminogen activator</td>
</tr>
<tr>
<td>urokinase alfa</td>
<td>(27)</td>
<td>recombinant material plasminogen activator</td>
</tr>
<tr>
<td><strong>(c)</strong></td>
<td><strong>without</strong> -ase <strong>suffix:</strong></td>
<td></td>
</tr>
<tr>
<td>batroxobin</td>
<td>(29)</td>
<td>the venom of the serpent <em>Bothropsatrox</em></td>
</tr>
<tr>
<td>bromelains</td>
<td>(18)</td>
<td><em>Ananas comosus Merr.</em> fibrin depolymerizing (anti-inflammatary)</td>
</tr>
<tr>
<td>chymopapain</td>
<td>(26)</td>
<td>papaya late proteolytic (chemonucleosis)</td>
</tr>
<tr>
<td>chymotrypsin</td>
<td>(10)</td>
<td>mammalian pancreas proteolytic (anti-inflammatory, antioedema)</td>
</tr>
<tr>
<td>defibrotide</td>
<td>(44)</td>
<td>mammalian pancreas proteolytic (anti-inflammatory, antioedema)</td>
</tr>
<tr>
<td>fibrinolysin</td>
<td>(human) (10)</td>
<td>human fibrinolytic</td>
</tr>
<tr>
<td>sutilains</td>
<td>(18)</td>
<td><em>Bacillus subtilis</em> proteolytic</td>
</tr>
<tr>
<td><strong>II</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-lipase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bucelpase alfa</td>
<td>(95)</td>
<td>human origin lipase</td>
</tr>
<tr>
<td>rizolipase</td>
<td>(22)</td>
<td><em>Rhizopus arrhizus var. Delemar</em> lipase</td>
</tr>
</tbody>
</table>
### III co-enzymes

| (a)  | cocarboxylase (1) | chemically defined | co-enzyme in the metabolism of pyruvic acid |
| (c)  | ubidecarenone (48) | chemically defined | naturally occurring co-enzyme, a component in the electron transfer system in mitochondria (congestive heart failure) |

### IV -dismase enzymes with superoxide dismutase activity

(USAN: superoxide dismutase activity (exception: orgotein))

| (a)  | ledismase (70), sudismase (58) |
| (c)  | isomerase orgotein (31) mammalian tissue (liver, red blood cell etc.) superoxide dismutase activity (anti-inflammatory) pegorgotein (72) |

### V -diplase plasminogen activator combined with another enzyme

| (a)  | amediplase (79) |

### VI -teplase tissue-type plasminogen activators

| (a)  | alteplase (59), desmoteplase (80), duteplase (62), lanoteplase (76), monteplase (71), nateplase (73), pamiteplase (78), reteplase (69), silteplase (65), tenecteplase (79) |
| (c)  | anistreplase (59) |

### VII -uplase urokinase-type plasminogen activators

| (a)  | nasaruplase (68), nasaruplase beta (85), saruplase (58) |

### VIII others

<p>| (a)  | agalsidase alfa (84) human origin treatment of deficiency of alpha-galactosidase activity (Fabry’s disease) |
| (a)  | agalsidase beta (84) hamster treatment of deficiency of alpha-galactosidase activity (Fabry’s disease) |
| (a)  | alfimeprase (85) <em>Agkistrodon contrix contrix</em> antithrombotic |</p>
<table>
<thead>
<tr>
<th>Enzyme Name</th>
<th>Origin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alglucerase (68)</td>
<td>Human origin (placenta isoenzyme)</td>
<td>Glucocerebrosidase</td>
</tr>
<tr>
<td>Alglucosidase alfa (91)</td>
<td>Recombinant</td>
<td>Treatment of Pompe’s disease</td>
</tr>
<tr>
<td>Asfotase alfa (104)</td>
<td>Recombinant</td>
<td>Phosphatase</td>
</tr>
<tr>
<td>Calaspargase pegol (105)</td>
<td>Escherichia coli</td>
<td>Asparaginase</td>
</tr>
<tr>
<td>Condolias (102)</td>
<td>Proteus vulgaris</td>
<td>Endolyase</td>
</tr>
<tr>
<td>Dornase alfa (70)</td>
<td>Human origin</td>
<td>Treatment of cystic fibrosis</td>
</tr>
<tr>
<td>Epafipase (85)</td>
<td>Human origin</td>
<td>Antiallergic, antiasthmatic</td>
</tr>
<tr>
<td>Eufauserase (84)</td>
<td>Euphausia superba</td>
<td>Digests proteins and selected cell surface adhesion molecules (wound healing; vaginal/oral candidosis)</td>
</tr>
<tr>
<td>Galsulfase (92)</td>
<td>Recombinant</td>
<td>Maroteaux-Lamy syndrome</td>
</tr>
<tr>
<td>Glucarpidase (92)</td>
<td>Pseudomonadaceae sp.</td>
<td>Adjunctive treatment of patients at risk of methotrexate toxicity</td>
</tr>
<tr>
<td>Hyalosidase (50)</td>
<td></td>
<td>Hyaluronoglucosaminidase (treatment of myocardial infarction)</td>
</tr>
<tr>
<td>Hyaluronidase (1)</td>
<td>Various origins</td>
<td>Depolymerizing hyaluronic acid (cellular diffusion factor)</td>
</tr>
<tr>
<td>Idursulfase (90)</td>
<td></td>
<td>Treatment of Hunter Syndrome (Mucopolysaccharidosis Type II), degrades glycosaminoglycans heparan and dermatan sulfate</td>
</tr>
<tr>
<td>Imiglucerase (72)</td>
<td>Human origin (placenta isoenzyme)</td>
<td></td>
</tr>
<tr>
<td>Laronidase (85)</td>
<td>Human origin</td>
<td></td>
</tr>
<tr>
<td>Pegademase (63)</td>
<td></td>
<td>Origin should be indicated</td>
</tr>
<tr>
<td>Pegadricase (105)</td>
<td>Candida utilis</td>
<td>Urate oxidase</td>
</tr>
<tr>
<td>Pegloticase (98)</td>
<td>Sus scrofa</td>
<td>Uricase</td>
</tr>
<tr>
<td>Penicillinase (10)</td>
<td>Bacillus cereus</td>
<td>Inactivating penicillin</td>
</tr>
</tbody>
</table>
-ast (x)  antiasthmatics or antiallergics, not acting primarily as antihistaminics

K.0.0.0 (BAN: antiasthmatics, antiallergics when not acting primarily as antihistamines) (USAN: antiasthmatics / antiallergics: not acting primarily as antihistamines; leukotriene biosynthesis inhibitors)

(a) acitazanolast (72), acreozast (77), andolast (67), asobamast (63), ataquimast (82), bamaquimast, (76), batebulast (66), bunaprolast (60), carotegrast (102), dametralast (54), dazoquinast (54), doqualast (48), eflumast (61), enofelast (67), enoxamast (52), fenprinast (48), filaminast (75), firategrast (96), ibudilast (58), idenast (58), loxanast (46), melquinast (62), oxalinast (49), pemirolast (61), picumast (47), pirodomast (64), quinotolast (64), raxofelast (68), repirinast (55), revenast (51), scopinast (76), suplatast tosilate (64), tazanolast (59), tibencilast (52), tioxamast (53), tiprinast (50), tranilast (46), valtegrast (93), zaprinast (46), zaurategrast (101)

-lukast  leukotriene receptor antagonist  USAN

(a) ablukast (61), cinalukast (70), iralukast (70), masilukast (94), montelukast (73), poblukast (70), pranlukast (67), ritolukast (64), sulukast (63), tipelu kast (95), tomelukast (59), verlukast (65), zafirlukast (71)

-milast  phosphodiesterase IV (PDE IV) inhibitors  USAN

(a) apremilast (97), catramilast (95), cilomilast (82), lirimilast (86), oglemilast (94), piclamilast (73), revamilast (102), rofumilast (77), ronmilast (104), tetomilast (91), tofimilast (85)

-trodst  thromboxane A2 receptor antagonists, antiasthmatics  USAN

(a) imitrodast (70), seratrodast (70)

-zolast  leukotriene biosynthesis inhibitors  USAN

(USAN: benzoxazole derivatives)

(a) binizolast (60), eclazolast (55), ontazolast (72), quazolast (55), tetrazolast (67)

(c) bufrolin (34), oxarbazole (38), pirolate (44)
**-astine (x) antihistaminics**

G.2.0.0 (BAN: antihistamines, not otherwise classifiable)

(USAN: antihistaminics (histamine-H₁ receptor antagonists))

(a) acrivastine (51), alinastine (74), azelastine (36), bamirastine (91), barmastine (59), bepiastine (19), bepotastine (78), bilastine (82), cabastinen (50), carebastine (52), clemastine (22), dorastine (23), ebastine (52), emedastine (59), epinastine (55), flezelastine (67), levocabastine (50), linetastine (74), mapinastine (72), mizolastine (64), moxastine (15), noberastine (59), octastine (37), perastine (15), piclopastine (22), rocastine (57), setastine (39), talastine (18), temelastine (54), zepastine (26)

(b) cloperastine (18) (antitussive), vinblastine (12) (vinca-alkaloid)

(c) astemizole (45), carboxamine (4)

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**-azam see - azepam**

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**-azenil benzodiazepine receptor antagonists/agonists (benzodiazepine derivatives)**

(USAN: benzodiazepine receptor antagonists/agonists)

(a) bretazenil (60), flumazenil (55), iomazenil ¹²³I (66), sarmazenil (59)

(b) nabazenil (49)

**-carnil benzodiazepine receptor antagonists/agonists (carboline derivatives)**

(a) abecarnil (60), gedocarnil (61)

**-quinil benzodiazepine receptor agonists, also partial or inverse (quinoline derivatives)**

(USAN: benzodiazepine receptor agonists, also partial or inverse (quinoline derivatives)

(a) lirequinil (72), radequinil (93) (replaces resequin (90)), terbequinil (63)
INN – The use of stems

-azepam (x) diazepam derivatives

C.1.0.0 (BAN: substances of the diazepam group) (USAN: antianxiety agents (diazepam type))

(a) bromazepam (22), camazepam (30), carburazepam (39), cinolazepam (46), clonazepam (22), cyprazepam (16), delorazepam (40), diazepam (12), doxefazepam (43), elfazepam (36), fletazepam (31), fludiazepam (36), flunitrazepam (24), flurazepam (20), flutemazepam (58), fluprazepam (45), fosazepam (27), halazepam (29), iclazepam (37), lorazepam (23), lormetazepam (38), meclonazepam (44), medazepam (20), menitrazepam (22), metaclazepam (46), motrazepam (31), nimefazepam (26), nitrazepam (16), nordazepam (39), nortetrazepam (20), oxazepam (13), pinazepam (32), pivoxazepam (34), prazepam (14), profazepam (31), quazepam (36), reclazepam (53), sulazepam (14), temazepam (22), tetrazepam (17), tolufazepam (51), tuclazepam (40), uldazepam (30)

not true benzodiazepines: bentazepam (33), clotiazepam (30), lopirazepam (36), prenazepam (45), ripazepam (33), zolazepam (28)

related: adinazolam (45), alprazolam (30), arfendazam (39), clazolam (29), climazolam (51), clobazam (25), clobenzepam (25), cloxazolam (29), ecopipam (80), estazolam (31), flutazolam (32), haloxazolam (38), ketazolam (26), levotofisopam (92), lofendazam (36), loprazolam (44), mexazolam (40), midazolam (40), nefopam (25), oxazolam (25), razobazam (52), remimazolam (102), tofisopam (26), trazolam (30), triflubazam (28), zapizolam (43), zomebrazam (49)

(c) brotizolam (40), chloridiazepoxide (11), ciclotizolam (40), demoxepam (23), dipotassium clorazepate (17), ethyl carfluzepate (43), ethyl dirazepate (44), ethyl loflazepate (43), etizolam (40), potassium nitrazepate (17)

not related: anxiolytic: fenobam (36), muscle relax.: xilobam (36)

-azepide cholecystokinin receptor antagonists, benzodiazepine derivatives

J.1.0.0 (USAN: cholecystokinin receptor antagonists)

(a) devazepide (62), pranazepide (75), sograzepide (101), tarazepide (68)

(c) lorglumide (56)
-azocine  narcotic antagonists/agonists related to 6,7-benzomorphan

A.4.1.0  (USAN: narcotic antagonists/agonists, 6,7-benzomorphan derivatives)

(a)  anazocine (30), bremazocine (43), butinazocine (53), carbazocine (16), cogazocine (36), cyclazocine (14), eptazocine (45), gemazocine (29), ibazocine (36), ketazocine (34), metazocine (9), moxazocine (38), pentazocine (14), phenazocine (9), quadazocine (54), tonazocine (46), volazocine (19) related compounds: dezocine (35)

(b)  streptozocin (33)

-azolam  see -azepam

-azoline  antihistaminics or local vasoconstrictors, antazoline derivatives

E.4.0.0  (USAN: antihistamines/local vasoconstrictors (antazoline type))

(a)  antazoline (1), cilutazoline (61), cirazoline (38), clonazoline (18), coumazoline (26), domazoline (30), fenoxazoline (12), indanazoline (42), metrafazoline (33), naphazoline (1), nemazoline (63), oxymetazoline (13), phenamazoline (6), prednazoline (22), talazoline (01), tefazoline (24), tinazoline (39), tramazoline (15), xylometazoline (8)

(b)  cefazolin (25) (antibiotic)

(c)  tetryzoline (6), metizoline (22)

-azone  see -buzone
-azosin  antihypertensive substances, prazosin derivatives

H.3.0.0  (USAN: antihypertensives (prazosin type))

(a)  bunazosin (50), doxazosin (47), neldazosin (60), prazosin (22), quinazosin (17), terazosin (44), tiodazosin (41), trimazosin (31)

related: alfuzosin (49), tamsulosin (65), tipentosin (55)

-bacept  see -cept

-bactam  β-lactamase inhibitors

S.6.5.0

(a)  brobactam (53), sulbactam (44), tazobactam (60)

(c)  clavulanic acid (44)

-bamate  tranquillizers, propanediol and pentanediol derivatives

C.1.0.0  (USAN: tranquilizers/antiepileptics (propanediol and pentanediol groups))

(a)  carisbamate (96), cyclarbamate (13), felbamate (54), meprobamate (6), nisobamate (21), pentabamate (13), tybamate (14)

(b)  difebarbamate (16), febarbamate (12), lorbamate (24), phenprobamate (10)

(c)  mebutamate (12), metaglycodol (12) (not a carbamate)
**barb (d)**  **hypnotics, barbituric acid derivatives**

A.2.1.0  
(BAN: -barb, -barb-: for barbiturates)  
(USAN: -barb; or -barb-: barbituric acid derivatives)

(a)  
allobarbital (1), amobarbital (1), aprobarbital (1), barbexcclone (16), barbital (4), barbital sodium (4), benzobarbital (25), brallobarbital (41), carbubarb (14), cyclobarbital (1), difebarbamate (16), eterobarb (32), febarbamate (12), heptabarb (14), hexobarbital (1), methylphenobarbital (1), nealbarbital (11), pentobarbital (1), phenobarbital (4), phenobarbital sodium (4), probarbital sodium (1), proxibarbal (33), secbutabarbital (12), secobarbital (4), tetrabarbital (4), thialbarbital (4), thiotetraabarbital (4), vinbarbital (1)

(c)  
butalbital (4), buthalital sodium (8), metharbital (1), methitural (6), methohexital (8), phetharbital (10), talbutal (17), thiopental sodium (4), vinylbital (12)

(c)  
prazitone (19) (barbituric acid derivative used as antidepressive), bucolome (17) (barbituric acid derivative used as anti-inflammatory uricosuric)

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**-begrón**  **β₃-adrenoreceptor agonists**

M.3.2.1

(a)  
amibegrón (94), fasobegrón (98), mantabegrón (88), mirabegrón (98), rafabegrón (88), ritobegrón (91), solabegrón (90), talibegrón (86)

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**-benakin** see **-kin**

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**-bendan** see **-dan**

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**-bendazole**  **anthelmintics, tiabendazole derivatives**

S.3.1.0  
(USAN: anthelmintics (tiabendazole type))

(a)  
albendazole (35), albendazole oxide (56), bisbendazole (29), cambendazole (24), ciclobendazole (31), dibendazole (49), etibendazole (49), fenbendazole (29), flubendazole
INN – The use of stems

(34), lobendazole (28), luxabendazole (52), mebendazole (24), oxibendazole (30), parbendazole (19), subendazole (31), tiabendazole (13), triclabendazole (45)

(b) bendazol (12) (vasodilator, also benzimidazole derivative)
   L.0.0.0: nocodazole (36), procodazole (36) (also benzimidazole derivative)

(c) oxendazole (35), tioxidazole (39)
   related: furodazole (37) (S.3.1.0)

-bercept see -cept

-bermin see -ermin

-betasol see pred

-bersat anticonvulsants, benzoylamino-benzpyran derivatives
   A.3.1.0 (USAN: anticonvulsants; antimigraine (benzoylamino-benzpyran derivatives))
   (a) carabersat (85), tidembersat (84), tonabersat (85)

bol (x) anabolic steroids
   M.4.1.0 (BAN: steroids, anabolic)
   (USAN: bol- or -bol- : anabolic steroids)
   (a) bolandiol (16), bolasterone (13), bolazine (21), boldenone (20), bolenol (19), bolmantalate (16), clostebol (22), enestebol (22), furazabol (16), mebolazine (21), mibolerone (27), norboletone (15), norclostebol (22)
   -bolone: formebolone (31), mesabolone (29), metribolone (17), oxabolone cipionate (14), quinbolone (14), roxibolone (40), stenbolone (17), tibilone (22), trenbolone (24)
   (c) ethylestrenewnol (13), hydroxystenozole (10), metandienone (12), metenolone (12), oxandrolone (12), propetandrol (13), tiomerone (14)

-bradine sinus node inhibitors
   H.0.0.0
   (a) cilobradine (63), ivabradine (75), zatebradine (62)
<table>
<thead>
<tr>
<th>Stem</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>-brate</td>
<td>see -fibrate</td>
<td>Usual anti-inflammatory agents, arybutanoic acid derivatives</td>
</tr>
<tr>
<td></td>
<td>A.4.2.0</td>
<td>(a) butibufen (32), fenbufen (30), furobufen (30), indobufen (39), metbufen (43)</td>
</tr>
<tr>
<td>-bulin</td>
<td>antineoplastics; mitotic inhibitors, tubulin binders</td>
<td>Usual antineoplastics; mitotic inhibitors, tubulin binders</td>
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<td></td>
<td>L.0.0.0</td>
<td>(a) batabulin (90), cevipabulin (96), crolibulin (104), denibulin (95), eribulin (97),</td>
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<td></td>
<td></td>
<td>fosbretabulin (100), indibulin (91), lexibulin (105), mivobulin (77), ombrabulin (99),</td>
</tr>
<tr>
<td></td>
<td></td>
<td>plinabulin (102), rosabulin (95), taltobulin (91), verubulin (103)</td>
</tr>
<tr>
<td></td>
<td>(b) thyroglobulin (26)</td>
<td></td>
</tr>
<tr>
<td>-butazone</td>
<td>see -buzone</td>
<td></td>
</tr>
<tr>
<td>-buzone</td>
<td>anti-inflammatory analgesics, phenylbutazone derivatives</td>
<td>Usual anti-inflammatory analgesics, phenylbutazone derivatives</td>
</tr>
<tr>
<td></td>
<td>A.4.2.0</td>
<td>(USAN: anti-inflammatory analgesics (phenylbutazone type))</td>
</tr>
<tr>
<td></td>
<td>(a) feclobuzone (27), kebuzone (19), pipebuzone (25), suxibuzone (24), tribuzone (33)</td>
<td></td>
</tr>
<tr>
<td>-butazone</td>
<td>(USAN: anti-inflammatory analgesics (phenylbutazone type))</td>
<td>Usual anti-inflammatory analgesics, phenylbutazone derivatives</td>
</tr>
<tr>
<td>-zone</td>
<td>aminophenazone (13), bisfenazone (33), famprofazone (21), morazone (12), nifenazone (15), nimzone (20), niprofazone (29), phenazone (4), propyphenazone (1), sulfinpyrazone (8)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clofezone (17), proxifezone (24)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>related: azapropazone (18), benhepazone (15), bumphadizone (24), cinnopentazone (17), isamfazone (37), metamfazone (12), osmadizone (26), ruvazone (26)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(c) benzpiperylone (12), butopyrammonium iodide (8), dibupryone (17), metamizole sodium (53), metazamide (16), piperylone (11)</td>
<td></td>
</tr>
</tbody>
</table>
-caine (x)  local anaesthetics

D.1.0.0

(a) ambucaine (6), amoxecaine (1), aptocaine (21), articae (47) (previously carticae (27)), benzocaine (42), betoxycaine (13), bucricaine (49), bumecaine (25), bupivacaine (17), butacaine (4), butanilicaine (16), chloroprocaine (6), cinchocaine (1), clibucaine (14), clodacaine (13), clormecaine (17), cyclomethycaine (6), dexivacaine (20), diamocaine (22), edronocaine (84), elucaine (29), etidocaine (29), fexicae (25), fomocaine (18), hexylcaine (4), hydroxyprocaine (1), hydroxytetracaic (1), impracaic (85), ketocaine (15), leucinocaine (17), levobuvivaceae (74), lidocaine (1), lotucaine (27), meprivaic (14), meprylcaine (4), myrtecaine (15), octacaine (14), oxetacaine (13), oxybuprocaic (8), parethoxycaic (1), paridocaine (8), phenacaine (4), pinolcaic (32), piperoxicaic (1), piridocaine (1), pramocaine (4), pribeceaine (32), prilocaine (14), procaic (10), propanocaine (6), propipocaic (16), propoxycaic (4) proxymetacaic (6), pyrrocaic (13), quatacaine (18), quinisoicaic (4), risocaine (26), rodocaic (27), rovipicaic (50), tetraaic (4), tolycaic (16), trapencaic (56), trimecaic (11), vadoicaic (57)

(c) amolanone (6), benzyl alcohol (1), cryofluorane (6), diperod (1), dyclonine (6), midamaline (6)

-cain- (x)  Class I antiarrhythmics, procainamide and lidocaine derivatives

H.2.0.0  (BAN: antifibrillants with local anaesthetic activity)

(a) acecaicaine (39), asocaicai (47), barucaine (52), bucaicaine (35), carcaumin chloride (36), caroicaicaine (46), drocicainide (47), encainide (40), epicainide (40), eroicaicaine (50), flecaicaine (37), guafecainol (38), indecaicaine (48) (originally ricaicaine (47)), itrocaicaine (54), ketocaicain (32), lorcaicaine (38), milcaicaine (77), modecacaine (63), murocaicaine (46), nicainoprol (46), nofecaicaine (44), pilsicacaine (62), pincaicaine (49), procaicarnamide (1), quinaicain (50), recainam (54), selpecacain (55), stirocaicaine (47), surcaicain (55), tocaicaine (36), transcaicaine (51), (verocaicaine (42) - replaced by tiapamil in List 43), zocaicaine (41)
N.8.0.0  (USAN: calciferol – calci- or -calci-: Vitamin D analogues)

(a) alfacalcidol (40), atocalcitol (88), becocalcidiol (92), calcifediol (26), calcipotriol (61), calcitriol (39), colecalciferol (13), doxercalciferol (82), ecalcidene (85), eldecalcitol (97), elocalcitol (95), ergocalciferol (13), falecalcitriol (74), inecalcitol (87), lexacalcitol (71), lunacalcipol (102), maxacalcitol (75), paricalcitol (78), secalciferol (62), seocalcitol (78), tacalcitol (65)

(b) calcitonin (31) (polypeptide)

(c) dihydrotachysterol (1)

-capone  catechol-O-methyltransferase (COMT) inhibitors

entacapone (65), nebicapone (96), nitecapone (62), opicapone (103), tolcapone (66)

-carbef  antibiotics, carbacephem derivatives

S.6.1.0

(a) loracarbef (60)

-carnil  see -azenil

-castat  see -stat

-cavir  see vir
cef- (x)  antibiotics, cefalosporanic acid derivatives

S.6.1.0 (USAN: cephalosporins)

(a) cefacetral (25), cefaclor (36), cefadroxil (33), cefalexin (18), cefaloglycin (16), cefalonium (16), cefaloram (16), cefaloridine (15), cefalotin (14), cefamandole (30), cefaparole (33), cefapirin (23), cefatrizine (34), cefazafur (36), cefazedone (36), cefazolin (25), cefbuperazone (48), cefcanel (60), cefcanel daloxate (59), cefcapene (68), cefclidin (64), cefdaloxime (64), cefdinir (61), cefditoren (66), cefedrolor (53), cefemipidone (58), cefepime (57), cefetamet (49), cefetecol (63), cefetrizole (44), cefivitril (52), cefixime (53), cefluprenam (71), cefmatilen (81), cefmenoxime (44), cefmepeidium chloride (57), cefmetazole (39), cefminox (53), cefodizime (44), cefonicid (42), cefoperazone (42), ceforanide (39), cefoselis (71), cefotaxime (42), cefotetan (48), cefotiam (40), cefovecin (87), cefoxazole (34), cefozopran (66), cefpimizole (50), cefpiramide (47), cefpirome (50), cefpodoxime (58), cefprozil (62), cefquinome (59), cefradine (26), cefrotile (34), cefroxadine (42), cefsulodin (38), cefsumide (38), cefaroline fosamid (97), cefazidime (44), cefteram (55), ceftezole (34), cef汀bute (60), ceftefur (53), ceftiolene (49), cefetoxide (43), ceftriaxone (44), cefuroxime (34), cefuzonam (55)

-oxef  antibiotics, oxacefalosporanic acid derivatives

S.6.1.0 (USAN: antibiotic, oxacefalosporanic acid derivatives)

(a) flomoxef (55), latamoxef (46)

cell- or  cellulose derivatives

cel- [cel- in Spanish]

U.4.0.0

(a) celucloral (40)

(c) celiprolol (35)
cell-ate  cellulose ester derivatives for substances containing acidic residues

U.4.0.0  [cel-ato in Spanish]

(a)  cellaburate (23), cellacefate (18)

-cellose  cellulose ether derivatives

U.4.0.0  [-celosa in Spanish]

(a)  -

(c)  carmellose (45), croscarmellose (48), ethylcellulose (80), hyetellose (80), hymetellose (80), hyprolose (80), hypromellose (18), methylcellulose (4)

-cept  receptor molecules, native or modified (a preceding infix should designate the target)

S.7.0.0

(a)  -ba-  B-cell activating factor receptors
     briobacept (98)

-ber-  vascular endothelial growth factor (VEGF) receptors
     aflibercept (96), conbercept (105)

-co-  complement receptors
     mirococept (91)

-far-  subgroup of interferon receptors
     bifarcept (86)

-lea-  lymphocyte function-associated antigen 3 receptors
     alefacept (84)

-na-  interleukin-1 receptors
     rilonacept (95)

-ner-  Tumour Necrosis Factor (TNF) receptors
     baminercept (99), etanercept (81), lenercept (72), onercept (82), pegsunercept (87)

-ta-  cytotoxic T lymphocyte-associated antigen 4 (CTLA-4) receptors
     abatacept (91), belatacept (93)

-ter-  transforming growth factor receptors
     dalantercept (105), sotatercept (104)

-vir-  antiviral receptors
     alvircept sudotox (69)

other:  atacicept (95)
INN – The use of stems

-cic  hepatoprotective substances with a carboxylic acid group

J.1.2.0  (USAN: hepatoprotectives (timonacic group))

(a)  limazocic (69), tidiacic (33), timonacic (33), (tiofacic (45) replaced by stepronin (46))
(b)  bisorcic (34) (psychostimulant)
(c)  stepronin (46)

-ciclovir  see -vir

-cidin  naturally occurring antibiotics (undefined group) (14th Report, 1964)

S.6.0.0  (USAN: natural antibiotics (undefined group))

(a)  candididin (17), gramicidin (1), gramicidin S (26), methocidin (6)
(b)  guancidine (18) (hypotensive)

-ciguat  guanylate cyclase activators

F.2.0.0

(a)  ataciguat (88), cinaciguat (97), etriciguat (88), lificiguat (95), nelociguat (105), riociguat (98)

-cillide  see -cillin

-cillin (x)  antibiotics, 6-aminopenicillanic acid derivatives

S.6.1.0  (USAN: penicillins)

(a)  aecillin (14), almecillin (14), amantocillin (17), amoxicillin (27), ampicillin (13), apalcillin (39), aspoxicillin (50), azidocillin (19), azlocillin (36), bacampicillin (32), benethamine penicillin (1), benzathine benzylpenicillin (18), benzylpenicillin (53), carbenicillin (20), carfecillin (30), carindacillin (29), ciclacillin (22), clemizole penicillin (8), clometocillin (12), cloxacillin (13), dicloxacinil (16), epicillin (25), fenbenicillin (13), fibracillin (30),
flucloxacillin (17), fomidacillin (55), fumoxicillin (47), furbucillin (31), fuzzocillin (47), hetacillin (16), isopropriocillin (12), lenampicillin (50), levropriocillin (12), metampicillin (20), meticillin (12), mezlocillin (34), naflcillin (13), oxacillin (15), oxetacillin (33), penamecillin (16), pheneticillin (11), phenoxy methyl penicillin (6), phenyracillin (8), Piperacillin (38), Pirbenicillin (35), Piridicillin (43), Piroxicillin (49), Pivampicillin (23), Prazocillin (27), Propicillin (13), Quinacillin (14), Rotamicillin (35), Sarmoxicillin (41), Sarpicillin (36), Sulbenicillin (26), Sulamicillin (48), Suncillin (25), Talamicillin (31), Tameticillin (35), Temocillin (46), Ticarcillin (29), Tifencillin (12), Tobicillin (78)

(b) Xantocillin (12)

(c) Penimepicycline (16), Penimocycline (22)

-cillide

S.6.1.0 Libecillide (32)

-cillinam

S.6.1.0 Bacmecillinam (38), Mecillinam (32), Pivmecillinam (32)

-cillinam see -cillin

-cilpine see -pine

-cisteine see -stein

-citabine nucleoside antiviral or antineoplastic agents, cytarabine or azacytidine derivatives

(USAN: nucleoside antiviral or antineoplastic agents, cytarabine or azarabine derivatives)

L.4.0.0

(a) Ancitabine (36), Apricitabine (95), Capecitabine (73), Decitabine (61), Dexelvucitabine (95), Elecucitabine (89), Emtricitabine (80), Enocitabine (46), Fiacitabine (59), Flurocitabine (38), Galocitabine (65), Gemcitabine (62), Ibacitabine (57), Mericitabine (104), Sapacitabine (94), Tezacitabine (84), Torcitabine (87), Troxacitabine (81), Valopicitabine (93), Valtorcitabine (90), Zalcitabine (66)

(c) Cytarabine (14), Azacitidine (40)
**-clidine/-clidinium  muscarinic receptors agonists/antagonists**

E.1.0.0  (USAN: muscarinic agonists (various indications))

aceclidine (13), benzoclidine (25), eticyclidine (44), gacyclidine (76), phencyclidine (11), procyclidine (01), rolicyclidine (44), talsaclidine (72), tenocyclidine (44), vedaclidine (76)
acldinium bromide (100), clidinium bromide (06), droclidinium bromide (33)

**-clone  hypnotic tranquillizers**

A.2.2.0  (USAN: hypnotics / tranquillizers (zopiclone type))

(a) barbexaclone (16), eszopiclone (87), pagoclone (74), pazinaclone (70), suproclone (46), suriclone (43), suproclone (46), zopiclone (39)

(b) gestaclone (23), pimeclone (20)

**-cocept  see -cept**

**-cog  blood coagulation factors**

I.2.0.0

*(-)eptacog* blood coagulation VII:  eptacog alfa (activated) (77), eptacog alfa pegol (activated) (101), vatreptacog alfa (activated) (98)

*(-)octocog* blood factor VIII:  beroctocog alfa (98), moroctocog alfa (72), octocog alfa (73), simoctocog alfa (104), turooctocog alfa (104)

*(-)nonacog* blood factor IX:  nonacog alfa (77), nonacog beta pegol (103)

*(-)tridecacog* blood factor XIII:  catridecacog (99)

Other:  vonicog alfa (102)

**-cogin  blood coagulation cascade inhibitors**

I.2.0.0

drotrecogin alfa (activated) (86), pegnivacogin (105), taneptacogin alfa (90), tifacogin (78)
-conazole (x)  systemic antifungal agents, miconazole derivatives

BAN; USAN

S.4.0.0  (BAN: systemic antifungals of the miconazole group)
(USAN: systemic antifungals (miconazole type))

![Chemical structure of miconazole](image)

(a) albaconazole (87), aliconazole (43), alteconazole (53), arasertaconazole (93), azaconazole (45), becliconazole (65), brolaconazole (58), butoconazole (40), cisconazole (59), croconazole (55), (cyproconazole (ISO)), democonazole (42), (diniconazole (ISO C17H17Cl2N3O)), doconazole (37), eberconazole (64), econazole (27), efinaconazole (104), embeconazole (92), enilconazole (44), (etaconazole (ISO)), fenticonazole (44), fluconazole (54), fosfluconazole (83), (furconazole (ISO/TC 81 N 872 C15H14Cl2F3N3O2)), (hexaconazole (ISO C14H17Cl2N3O)), isavuconazole (96), isoconazole (30), itraconazole (50), ketoconazole (43), lanoconazole (66), luliconazole (86), miconazole (22), neticonazole (63), omoconazole (45), orconazole (40), oxiconazole (42), parconazole (39), (penconazole, (ISO)), posaconazole (82), (propiconazole (ISO)), pramiconazole (95), ravuconazole (83), saperconazole (59), sertaconazole (56), sulconazole (38), (tebuconazole (ISO C16H22Cl1N3O)), terconazole (45) (originally triaconazole), tioconazole (40), (uniconazole (ISO C15H18ClN3O)), valconazole (40), voriconazole (73), zinoconazole (50), zoficonazole (43)

(c) bifonazole (44), isavuconazonium chloride (96)

cort (x)  corticosteroids, except prednisolone derivatives

BAN, USAN

Q.3.0.0  (USAN: -cort-: cortisone derivatives)

![Chemical structure of cortisone](image)

(a) amebucort (54), anecortave (80), butixocort (63), cicitonide (28), corticotropin (68), corticotropin-zinc hydroxide (68), cortisone (1), cortisul (30), cortivazol (23), cortodoxone (15), deflazacort (39) (previously azacort (38)), desoxycortone (4), fluazacort (30), fludrocortisone (6), fludroxycortide (12), fluocortin (31), formocortal (18), hydrocortamate (6), hydrocortisone aceponate (54), locicortolone...
dicibate (60), naflocort (50), nicocortonide (40), nivacort (24), resocort (74), tixocortol (38)

(b) prednisolone derivatives: clocortolone (16), difluocortolone (18), fluocortolone (15), halocortolone (31)

(c) aldosterone (6), algestone (22) (also progest. when used as algestone acetophenide), medrysone (16)

**USAN**

-coxib (x) **selective cyclo-oxygenase inhibitors**

A.4.2.0 (USAN: cyclooxygenase-2 inhibitors)

(a) apricoxib (99), celecoxib (80), cimicoxib (89), deracoxib (80), etoricoxib (84), firocoxib (89), lumiracoxib (87), mavacoxib (94), parecoxib (80), robenacoxib (91), rofecoxib (80), tilmacoxib (84), valdecoxib (80)

**USAN**

-crinat **diuretics, etacrynic acid derivatives**

N.1.2.2 (USAN: diuretics (ethacrynic acid derivatives))

\[
\begin{align*}
\text{H}_3\text{C} & \longrightarrow \text{CH}_2 \quad \text{O} & \longrightarrow \text{CO}_2\text{H} \\
\text{O} & \longrightarrow \quad \text{Cl} & \quad \text{Cl}
\end{align*}
\]

(a) brocrinat (51), sulicrinat (52)

(c) etacrynic acid (14), furacrinic acid (29), indacrinone (51), tienilic acid (25)

**USAN**

-crine (d) **acridine derivatives**

\[
\begin{align*}
\text{N} & \quad \text{N} \\
\text{N} & \quad \text{N}
\end{align*}
\]

(a) antineoplastics: amsacrine (44), nitracrine (35)
anthelminthics; antimalarials: floxacrine (34), mepacrine (4)
antidepressants: dimetacrine (19), monometacrine (19)
antiparkinsonian: botiacrine (38)
acetylcholinesterase inhibitors: ipidacrine (73), suronacrine (61), tacrine (8), velnacrine (61)

(c) acridorex (2l), acriflavin chloride (l), acrisorcin (l3), aminoacridine (l), ethacridine (l), proflavine (l)
-cromil  antiallergics, cromoglicic acid derivatives

K.0.0.0  (USAN: antiallergics (cromoglicic acid derivatives))

(a) ambicromil (48) (replacement of probicromil (46)), isocromil (39), minocromil (50), nedocromil (50), proxicromil (39), terbucromil (38), texacromil (58)

(c) cromitrile (46), cromoglicate lisetil (72), cromoglicic acid (18)

-curium  see -ium

-cycline (d)  antibiotics, tetracycline derivatives

S.6.3.0  (BAN: antibiotics of the tetracycline group)
(USAN: antibiotics (tetracycline derivatives))

(a) amicycline (14), apicycline (17), cetocycline (39), chlortetracycline (4), clomocycline (16), colimecycline (33), demeclocycline (25), demecycline (14), doxycycline (16), etamocycline (18), guamecycline (22), lymecycline (14), mecloycline (14), meglucycline (22), metacycline (12), minocycline (14), nitrocycline (14), omadacycline (102), oxytetacycline (1), pecocycline (15), penimepicycline (16), penimocycline (22), pipacycline (12), rolitetracycline (11), sancycline (15), tetracycline (4), tigecycline (86)

related: carubicin (40), daunorubicin (20), detorubicin (41), doxorubicin (25), zorubicin (39)
INN – The use of stems

**-dan** cardiac stimulants, pimobendan derivatives

H.1.0.0 (USAN: positive inotropic agents (pimobendan type))

(a) adibendan (57), bemorodan (61), imazodan (55), indolidan (57), levosimendan (68), meribendan (62), pimobendan (46), prinoxodan (64), senazodan (85), siguazodan (60), simendan (66)

(b) nitrodan (15), tyromedan (15)

**-dapsone** antimycobacterials, diaminodiphenylsulfone derivatives (14th Report, 1964)

S.5.2.0 (USAN: antimycobacterial (diaminodiphenylsulfone derivatives))

(a) acedapsone (22), amidapsone (28), dapsone (23)

**-decakin** see -kin

**-denoson** adenosine A receptor agonists

H.0.0.0

apadenoson (94), binodenoson (90), capadenoson (95), regadenoson (91), selodenoson (91), sonedenoson (101), tecadenoson (87)

**-dermin** see –ermin
-dil

vasodilators (18th Report, 1968)

USAN

F.2.0.0
(USAN: -dil; dil-; or -dil-: vasodilators (undefined group))

F.2.0.0
(a) alprostadil (39), aviptadil (78), belfosdil (61), benfurodil hemisuccinate (16), biclodil (52), bufomedil (33), burodiline (26), carprazidil (45), cetiedil (27), cinepaxadil (50), dopropidil (59), eliprodil (66), fasudil (64), fenoxedil (27), flosatidil (64), fostedil (51), fronepidil (59), ifenprodil (27), levosemotiadil (72), manozodil (47), mefenidil (48), minoxidil (25), naftopidil (52), naminidil (87), nesapidil (52), perfomedil (60), pinacidil (46), piribedil (23), pitenodil (37), podifen (22), radiprodiol (98), stevaladil (34), suloctidil (30), tipropidil (44), traxoprodil (86), urapidil (27), viquidil (25)

(c) dilmefone (33)

F.2.1.0
(a) coronary vasodilators: bepridil (30), bumepridil (44), ecipramidil (40), fendiline (24), fenetradil (30), floredil (28), hexadiline (13), ipramidil (51), mepramidil (27), metrifudil (23), nicorandil (44), pirozadil (33), pretiadil (27), razinodil (38), semotiadil (64), sinitrodiol (74), terodiline (16), tiradil (18), trapidil (29)

(c) dilazep (22), diltiazem (30)

-dilol
carvedilol (50), dioxadilol (53), dramedilol (57), flavodilol (48), mindodilol (52), nipradilol (50) (previously nipradolol),oberadilol (77), parodilol (57), prizidilol (44), tribendilol (54)

(b) diloxanide (8) (amebicide), methdilazine (10) (antihistaminic), phenobutiodil (6) (contrast medium), prodilidine (12) (analgesic)

-fradil
calcium channel blockers acting as vasodilators

USAN

(a) mibefradil (72)

-pendyl
cloxypendyl (15), isothipendyl (6), oxypendyl (13), prothipendyl (6)

-dyl
bisacodyl (13) (laxative), bunamiodyl (10), iofendylate (12), trihexyphenidyl (1) (antiparksonian)

-dilol
see -dil
-dipine (x) calcium channel blockers, 1,4-dihydropyridine derivatives

F.2.1.0 (BAN: calcium ion channel antagonists)
(USAN: phenylpyridine vasodilators (nifedipine type))

(a) amlodipine (53), clevidipine (75), darodipine (51) (replaces dazodipine (49)),
dexniguldipine (67), elgodipine (61), elnadipine (59), felodipine (44), flordipine (48),
isradipine (55), lacidipine (57), lemlidipine (69), levamlodipine (98), levni
guldipine (67), mesudipine (40), ncardipine (42), nifedipine (27),
niguldipine (60), niludipine (38),
nilvadipine (52), nimodipine (40), nisoldipine (42), nitrendipine (42),
olradipine (69), oxodipine (52), riodipine (51), sagandipine (64), teludipine (64) (previously taludipine
(61))
-nidipine: aranidipine (69), azelnidipine (69), barnidipine (64), benidipine (58),
cilnidipine (66), cronidipine (61), efonidipine (66), furdipine (67),
ganidipine (70), lercanidipine (69) (previously masnidipine),
manidipine (59), palonidipine (64), pranidipine (66),
sornidipine (58), vatanidipine (77)

(b) budipine (36) (central stimulant, antidepressant and antiparkinsonian),
prodipine (29) (central stimulant antiparkinsonian)

-dismase enzymes with superoxide dismutase activity, see -ase item V

-distim see -stim

-dodekin see -kin

-dopa dopamine receptor agonists, dopamine derivatives, used as antiparkinsonism/
prolactin inhibitors

E.1.1.0 (USAN: dopamine receptor agonists)

(a) carbidopa (37), ciladopa (52), dopamantine (31), droxidopa (57), etilevodopa (80),
fluorodopa (^{18}F) (64), levodopa (21), melevodopa (83), methyldopa (12)
-opamine
dopaminergic agents dopamine derivatives used as cardiac stimulant/
antihypertensives/diuretics

(USAN: -pamine: dopaminergics (butopamine type))

(a) butopamine (43), cliropamine (59), denopamine (50), dopamine (18), fosopamine (69),
ibopamine (43), octopamine (32), oxidopamine (37) (glaucoma), ractopamine (54) (1 of 4
isomers of butopamine)

(b) tiopropamine (36) (gastric and duodenal ulcers), tolpropamine (13) (antihistaminic)

(c) dobutamine (29), docarpamine (59), dopexamine (50), fenoldopam (53), levdobutamine
(65), methyldopa (12) (alpha-2 adrenoreceptor agonist, cardiotonic), zelandopam (84)

-dotril  see -tril/trilat

-dox  see -ox/-alox

-dralazine  antihypertensives, hydrazinephthalazine derivatives

H.3.0.0  (USAN: antihypertensives (hydrazine-phthalazines))

(a) budralazine (33), cadralazine (41), dihydralazine (4), endralazine (39), hydralazine (1),
mopidralazine (52), oxdralazine (38), picodralazine (18), pildralazine (48), todralazine (26)

-drine  sympathomimetics (16th Report, 1966)

E.4.0.0

(a) alifiedrine (49), bedoradrine (95), butidrine (16), cafedrine (14), cinnamedrine (19),
corbadrine (1), dioxethedrin (6), dioxifedrine (41), etafedrine (14), meluadrine (78),
methoxyphedrine (6), midodrine (27), norbudrine (17), oxyfedrine (16), pholedrine (1),
pseudoephedrine (11), racephedrine (66), ritodrine (22), theophylline ephedrine (14),
tinofedrine (32), trecadrine (53)
not phenethylamine derivatives: levopropylhexedrine (37), octodrine (19),
propyhexedrine (6)

(b) bufenadrine (13) (antiemetic) related chemically, chlormerodrin (4) (diuretic),
chlormerodrin (l97 Hg) (24), dieldrin (10) (insecticide), orphenadrine (8) (spasmolytic)
-frine sympathomimetic, phenethyl derivatives

E.4.0.0

(a) amidefrine mesilate (15), berefrine (68), ciclafrine (33), dimetofrine (27), dipivefrine (39), epinephrine (16), etilefrine (18), etilefrine pivalate (50), gepefrine (38), norepinephrine (45), norfenefrine (16), oxilofrine (62), phenylephrine (1), pivenfrine (42), racepinefrine (41)

-dronic acid calcium metabolism regulator, pharmaceutical aid

USAN

N.8.0.0
U.4.0.0 (USAN: -dronate: calcium metabolism regulators)

(a) alendronic acid (61), butedronic acid (59), clodronic acid (37), etidronic acid (22), ibandronic acid (71), incadronic acid (70), lidadronic acid (84), medronic acid (39), minodronic acid (78), neridronic acid (61), olpadronic acid (71), oxidronic acid (42), pamidronic acid (59), piridronic acid (58), risedronic acid (62), tiludronic acid (60), zoledronic acid (71)

-dutant see -tant

-dyl see -dil

-ectin antiparasitics, ivermectin derivatives

USAN

(USAN: antiparasitics (ivermectin derivatives))

(a) abamectin (53), dimadectin (73), doramectin (63), eprinomectin (73), fuladectin (71), ivermectin (44), latidectin (88), moxidectin (61), nemadectin (60), selamectin (81)

-elestat see -stat
<table>
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<th>Stem</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>-elvekin</td>
<td>see -kin</td>
</tr>
<tr>
<td>-emcinal</td>
<td>erythromycin derivatives lacking antibiotic activity, motilin agonists</td>
</tr>
<tr>
<td>J.0.0.0</td>
<td>(USAN: erythromycin derivatives lacking antibiotic activity)</td>
</tr>
<tr>
<td>(a)</td>
<td>alemcinal (84), idremcinal (81), mitemcinal (86)</td>
</tr>
<tr>
<td>-enicokin</td>
<td>see -kin</td>
</tr>
<tr>
<td>-entan (x)</td>
<td>endothelin receptor antagonists</td>
</tr>
<tr>
<td>F.2.0.0</td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>ambrisant (85), atrasentan (83), avosentan (93), bosentan (70), clazosentan (90), darusentan (82), edonentan (86), enrasentan (80), fandosentan (87), felopretnant (85), macitentan (99), nebentan (90), sitaxentan (83), tezosentan (81), zibotentan (94)</td>
</tr>
<tr>
<td>(-)eptacog</td>
<td>see -cog</td>
</tr>
<tr>
<td>erg</td>
<td>ergot alkaloid derivatives</td>
</tr>
<tr>
<td>F.4.0.0</td>
<td>(USAN: -erg-: ergot alkaloid derivatives)</td>
</tr>
<tr>
<td>C.7.0.0</td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>acertergamine (18), amesergide (67), brazergoline (37), bromerguride (51), cabergoline (54), cianergoline (47), delergotri (42), dihydroergotamine (16), disulergine (45), dosergoside (54), ergometrine (4), ergotamine (4), etisulergine (47), lergotri (32), lysergide (8), mergocriptine (54), mesulergine (47), metergoline (18), metergotamine (29), methylertergonitrine (1), methysergide (11), nicergoline (26), pergolide (41), propisergide (35), proterguride (50), romergoline (66), sergolexole (60), terguride (50), tiomergine (42), voxergolide (61)</td>
</tr>
<tr>
<td>(b)</td>
<td>ergocalciferol (13)</td>
</tr>
</tbody>
</table>
-eridine analgesics, pethidine derivatives (14th Report, 1964)

A.4.1.0 (USAN: analgesics (meperidine type))

\[ \text{OC} \quad \text{H}_3 \quad \text{N} \quad \text{CH}_3 \quad \text{O} \]

(a) anileridine (5), carperidine (11), etoxeridine (6), morpheridine (6), oxpheneridine (5), pheneridine (5), phenoperidine (11), properidine (5), sameridine (68), trimeperidine (6)

(b) diaveridine (18) (coccidiostat.), eseridine (53), nexeridine (34) (somewhat related)

(c) benzethidine (9), butoxylate (14), diphenoxylate (10), fetoxilate (21), furethidine (9), hydroxypethidine (5), pethidine (4), piminodine (9)

-ermin growth factors

U.0.0.0

-bermin vascular endothelial growth factors

(a) telbermin (85)

-dermin epidermal growth factors

(a) murodermin (63), nepidermin (97)

-fermin fibroblast growth factors

(a) ersofermin (66), palifermin (86), repifermin (82), sprifermin (105), trafermin (74), velafermin (94)

-filermin leukemia-inhibiting factor

(a) emfilermin (82)

-nermin tumour necrosis factor

(a) ardenermin (88), dulanermin (99), plusonermin (73), sonermin (68), tasonermin (76)

-plermin platelet-derived growth factor

(a) becaplermin (74)
-sermin  insulin-like growth factors
(a)  mecasermin (66), mecasermin rinfabate (91)

-termin  transforming growth factor
(a)  cetermin (74), liatermin (81)

-otermin  bone morphogenic proteins
(a)  avotermin (77), dibotermin alfa (89), eptotermin alfa (89), radotermin (92)

Others:  dapiicermin (93)

estr  estrogens

Q.2.1.0 (USAN: estr-; or -estr-: estrogens)
(a)  almestrone (24), benzestrol (1), broparestrol (8), cloxestradiol (12), dienestrol (1),
diethylstilbestrol (4), epiestradiol (12), epimestrol (22), (eptamestrol/etamestrol (49) deleted),
estradiol (4), estradiol benzoate (4), estradiol undecylate (16), estradiol valerate (35),
estramustine (24), estrapronicate (34), estrazinol (16), estril succinate (14), estrofurate (25),
estrone (4), ethinylestradiol (1), fenestrel (18), fosfetrol (15), furostilbestrol (1),
hexestrol (1), mestranol (12), methallenestril (6), methestrol (1), moxestrol (24), nilestrol (32),
orestrate (17), polyestradiol phosphate (36), promestriene (31), quinestradol (15),
quinestrol (14)
(b)  alfatradiol (84) (topical), allylestrenol (10) (progest.), ethylestrenol (13) (anabol.),
fulvestrant (78) (estrogens receptor antagonist), lynestrenol (13) (progest.)

-gestr-:  edogestrone (22), levonorgestrel (30), megestrol (13), melengestrol (13), norgestrel (17),
norgestrienone (18), pentagestrone (14), quingestrone (13)
(c)  chlorotrianisene (6), clomifene (12), enclomifene (33), zuclomifene (33) (antiestrogens)

-etanide  see -anide

-ethidine  see -eridine

-exakin  see -kin
-exine  mucolytic, bromhexine derivatives

K.0.0.0

(a)  adamexine (36), bromhexine (20), brovanexine (31), cistinexine (54), dembrexine (56), neltenexine (62), oxabrexine (40)

(b)  enefexine (54) (antidepressant), gamfexine (17) (antidepressant)

(c)  ambroxol (32) (dembrexol (50): replaced by dembrexine (56))

-farcept  see -cept

-fenamate  see -fenamic acid

-fenamic acid  anti-inflammatory, anthranilic acid derivatives

-fenamate "fenamic acid" derivatives

(USAN: -fenamic acid: anti-inflammatory (anthranilic acid derivatives); -fenamate: "fenamic acid" ester or salt derivatives)

A.4.2.0

(a)  clofenamic acid (13), enfenamic acid (45), flufenamic acid (13), meclofenamic acid (17), mefenamic acid (13), tolfenamic acid (24)

colfenamate (29), etofenamate (29), prefenamate (36), terofenamate (32), ufenamate (50)

(b)  clantifen (24), oxyfenamate (13)

phonetically close: clofenamide (13), diclofenamide (13) (N.1.1.0)

(c)  flutiazin (22)

-fenin  diagnostic aids; (phenylcarbamoyl)methyl iminodiacetic acid derivatives

U.1.0.0

(a)  arclofenin (52), butilfenin (41), disofenin (43), etifenin (43), galtifenin (59), lidofenin (39), mebrofenin (47)
-fenine phenine

analgesics, glafenine derivatives (subgroup of fenamic acid group)

(USAN: -fenine: analgesics (fenamic acid subgroup))

A.4.3.0

```
               O
        NH    OH
          |     |
      O----O
          |     |
        NH  CH
```

(a) antrafenine (35), floctafenine (24), florifenine (50), glafenine (15), nicafenine (40)

(b) spasmylytic diphenylacetates: adiphenine (1), drofenine (26)
other: buphenine (8) (vasodilator), cinfenine (27) (antidepressant)

-fentanil

opioid receptor agonists, fentanyl derivatives

A.4.1.0

```
      H3C
          N
      NO
```

(a) alfentanil (43), brifentanil (62), carfentanil (39), fentanyl (14), lofentanil (43), mirfentanil (64), ocfentanil (61), remifentanil (67), sufentanil (36), trefentanil (67)

-fentrine

inhibitors of phosphodiesterases

K.0.0.0

(a) benafentrine (44), pumafentrine (86), tolafentrine (70)

-fermin

see -ermin

-fiban

fibrinogen receptor antagonists (glycoprotein IIb/IIIa receptor antagonists)

I.2.0.0

carafiban (78), elarofiban (83), fradafiban (72), gantofiban (80), lamifiban (72), lefradafiban (75), lotrafiban (78), orbofiban (75), roxifiban (77), sibrafiban (77), tirofiban (73), xemilofiban (74)
**-fibrate**

**clofibrate derivatives**

H.4.0.0  
(BAN: substances of the clofibrate group)  
(USAN: antihyperlipidaemics (clofibrate type))

![Chemical structure](image)

(a) bezafibrate (35), biclofibrate (28), binifibrate (44), choline fenofibrate (97), ciprofibrate (36), clinofibrate (39), dulofibrate (43), etofibrate (31), fenirofibrate (49), fenofibrate (35), lifibrate (30), nicofibrate (31), picafibrate (35), ponfibrate (37), ronifibrate (55), salafibrate (41), serfibrate (34), simfibrate (22), sitofibrate (32), tiafibrate (33), timofibrate (40), tocofibrate (33), urefibrate (37), xantifibrate (31)

clofibric acid (20), clofibrate (13), aluminium clofibrate (31), calcium clofibrate (34), cinnarizine clofibrate (38), etofylline clofibrate (38), magnesium clofibrate (31)

clofibrate (28), plafibrate (39)

related: arhalofenate (101), beclobrate (35), eniclobrate (39), gemfibrozil (34), halofenate (20), lifibrol (62), metibride (53), terbufibrol (35), tibric acid (33), (fibrafylline (43) deleted)

(b) bromebric acid (25) (prophylaxis of migraine), fibracillin (30) (antibiotic)

(c) nafenopin (24), treloxinate (25)

---

**-filermin**

see -ermin

---

**-flapon**

5-lipoxygenase-activating protein (FLAP) inhibitors

K.0.0.0  
J.0.0.0

fiboflapon (105), quiflapon (72), veliflapon (95)

---

**-flurane**

halogenated compounds used as general inhalation anaesthetics

A.1.1.0  
(USAN: general inhalation anesthetics (halogenated alkane derivatives))

(a) aliflurane (36), cryofluorane (6), desflurane (62), enflurane (25), isoflurane (28), methoxyflurane (11), norflurane (20), roflurane (12), sevoflurane (25), teflurane (12)

(b) apaflurane (73)

(c) fluroxene (12), halothane (6)
-formin (d)  **anti hyperglycaemics, phenformin derivatives**

M.5.2.0  (USAN: hypoglycemics (phenformin type))

(a)  benfosformin (29), buformin (17), etoformin (34), metformin (21), metformin glyinate (103), phenformin (10), tiformin (22)

---

-fos  **insecticides, anthelmintics, pesticides etc., phosphorous derivatives**

(-vos)  (USAN: -fo(s)-: phosphoro-derivatives)

S.3.1.0  (Y.0.0.0)

1.  **organophosphorous derivatives:**

   \[ R\text{PO}_2\text{O}^{\cdot}R' \]

   (a)  **vet. insecticides:**

   quintiofos (25)

   (b)  **toldimfos (23) (vet. phosphorous source)**

   (c)  **vet. insecticides and anthelmintics:**

   metrifonate (16)

   **anthelmintic:** butonate (30)

2.  **phosphates:**

   \[ R\text{PO}_2\text{O}^{\cdot}R' \]

   (a)  **vet. insecticides:**

   clofenvinfos (23)

   **vet. anthelmintics:**

   bromofenofos (43), dichlorvos (28), naftalofos (16)

   **anthelmintics:** vincofos (28)
(b) triclofos (l3) (hypnotic, sedative)

(c) vet. anthelminthics:

fospirate (21), haloxon (16)

3. phosphorothioates:

\[ \text{R} \begin{array}{c}
\text{S} \\
\text{O} \\
\text{O} \\
\text{R'} \\
\text{R''}
\end{array} \]

vet. insecticides:

(a) bromofos (25), coumados (16), fenclofos (23), temefos (31)

(c) dimpylate (16), phoxim (20) (vet. insecticide and anthelminthic), pyrimethate (16)

4. phosphorodithioates:

\[ \text{R} \begin{array}{c}
\text{S} \\
\text{O} \\
\text{O} \\
\text{R'} \\
\text{R''}
\end{array} \]

(a) benoxafos (22) (vet. pesticide)

(c) carbofenon (23) (vet. insecticide), dioxation (l6) (vet. insecticide), (malathion (46) (deleted!))

5. phosphoramidates

\[ \text{R} \begin{array}{c}
\text{N} \\
\text{O} \\
\text{O} \\
\text{R'} \\
\text{R''}
\end{array} \]

crufo mate (16), uredofos (37)

anthelminthic:

imcarbofos (44)

-fos- or fos-

various pharmacological categories belonging to fos (other than those above):

-fos-
alafosfalin (41), amifostine (44), belfosil (61), benfosformin (29), butafosfan (38), cifostodine (50), creatinofosfate (20), dextensosserine (68), ferpi fosate sodium (69), furifosmin (70), monophosphothiamine (8), sodium picofosfate (37), sparfosic acid (46), technetium (99mTc), tetrofosmin (66), trifosmin (74)
-fosamid e: alkylating agents of the cyclophosphamide group
(USAN: isophosphoram ide mustard derivatives)
canfosfamide (92), cyclophosphamide (10), defosfamide (12), glufosfamide (77),
ifosfamide (23), mafosfamide (51), palifosfamide (99), perfosfamide (66), sufosfamide
(36), trofosfamide (23)

-fosine cytostatic
edelfosine (59), ilmofosine (56), miltefosine (61), perifosine (78)

fos-
fosalvudine tidoxil (95), fosamprenavir (83), fosaprepitant (94), fosarilate (53), fosazepam
(27), fosbetabulin (100), foscar net sodium (42), fos colic acid (12), fosdevir ine (103),
fosenzamide (48), fosf estrol (15), fosfluconazole (83), fosfluridine tidoxil (93),
fosfo creatinine (50), fosfomycin (25), fosfonet sodium (35), fosfosal (37), fosfructose (81),
fosinopril (69), fosinoprilat (62), fosmenic acid (49), fosmidomycin (46), fos pamine (69),
fosphenytoin (62), fospir ate (21), fospropofol (100), fosquidone (64), fostama tinib (100),
fostedil (51), fostriecin (55), fosveset (83)

-fovir see vir

-fradil see -dil

-frine see -drine

-fungin antifungal antibiotics (18th Report, 1968)
S.6.0.0 (USAN: antifungal antibiotics (undefined group))
S.4.3.0
(a) abafungin (74), anidulafungin (81), basifungin (72), caspofungin (80), cilofungin (60),
fusafungine (15), kalafungin (20), micafungin (84), nifungin (24), oxifungin (40),
sinefungin (39), triafungin (40)

-fylline N-methylated xanthine derivatives
B.1.0.0 (USAN: theophylline derivatives)

(a) acefylline clofibrol (44), acefylline piperazine (14), albifylline (66), aminophylline (4),
apaxifylline (71), arofylline (75), bamifylline (15), cipamfylline (71), denbufylline (55),
derenofylline (102), dimabefylline (19), diniprofylline (18), diprophylline (1), doxofylline (47), enprofylline (44), etamiphylline (6), etofylline (14), etofylline clofibrate (38), fibrafylline (43) (deleted), flufylline (48), fluprofylline (50), furafylline (48), guaifylline (16), isbufylline (62), istrafefylline (89), laprafylline (60), lisofylline (72), lomifylline (37), mercurophylline (1), metescucuffylline (15), mexafylline (48), midaxiphylline (79), naxifylline (86), nestifylline (64), pentifylline (29), pentoxyfylline (29), perbufylline (58), pimefylline (21), propentofylline (46), proxyphylline (10), pyridofylline (14), rololofylline (98), spirofylline (58), stacofylline (73), tazifylline (52), theophylline ephedrine (14), tonapofylline (102), torbafylline (56), triclofylline (19), verofylline (43), visnafylline (24), choline theophyllinate (8), fenetylline (16)

cafedrine (14), dimenhydrinate (1), dimethazan (8), meralluride (1), mercumatilin sodium (4), piprinhydrinate (8), promethazine teoclate (10), protheobromine (14), theodrenaline (14), xantifibrate (31), xantinol nicotinate (16)

radicals and groups: teprosilate (29)

gab (x) gabamimetic agents

E.0.0.0

(a) atagabalin (102), fengabine (53), gabapentin (46), gabapentin enacarbil (94), gadoxadol (48)

(b) gabexate (35) (proteolytic)

gado- (x) diagnostic agents, gadolinium derivatives

U.0.0.0

(a) gadobenic acid (64), gadobutrol (66), gadocetate dimeglumine (85), gadodenate (91),

gadomipiptazone (63), gadofosveset trisodium (86), gadoxol (85), gadoproxetil (60), gadopentetic acid (50), gadoterol (70), gadoteric acid (59), gadoversetamide (71), gadoxetic acid (71)

-gatran (x) thrombin inhibitors, antithrombotic agents

I.2.0.0

(a) atecgatran (103), atecgatran metoxil (105), dabigatran (83), dabigatran etexilate (87), efegatran (71), flovagatran (97), inogatran (72), melagatran (74), napsagatran (72), sofagatran (95), ximegatran (84)

(c) argatroban (57)
-gene  gene therapy products (see also Annex 4)

A two-word name approach has been selected:

**Word 1**  
- gene  
- **ermin-**  growth factor  
- **kin-**  interleukin  
- **lim-**  immunomodulator  
- **mul-**  multiple gene  
- **tusu-**  tumour suppression

**Word 2**  
- vec  
- **repl**  replicating viral vector  
- **adeno-**  adenovirus  
- **cana-**  canarypox virus  
- **herpa-**  herpes virus  
- **lenti-**  lentivirus  
- **morbilli-**  paramyxoviridae morbillivirus  
- **parvo-**  adeno-associated virus (parvoviridae dependovirus)  
- **retro-**  other retrovirus  
- **vaci-**  vaccinia virus

- **plasmid**  in case the vector is a plasmid

In case of non-plasmid naked DNA, there is no need for a second word in the name.
In case of antisense nucleotides, please refer to the already existing stem -rsen.

(a)  
alferminogene tadenovec (95), alipogene tiparvovec (99), amolimogene bepiplasmid (98), beperminogene pradenovec (101), riferminogene pecaplasmid (100), sitimagene ceradenovec (97), taberminogene vadenovec (100), talimogene laherparepvec (104), tipapkinogene sovacivec (102), velimogene aliplasmid (97)

**gest (x)**  
steroids, progestogens

Q.2.2.0  (USAN: -gest-: progestins)

(a)  
alternogest (46), anagestone (16), cingestol (20), clogestone (21), clomegestone (20), demegegestone (24), desogestrel (38), dextrnorgestrel (30), dienogest (49), dydrogesterone (12), edgestrone (22), etonogestrel (65), flugestone (16), gestalcene (23), gestadionol (22), gnostenedene (37), gestonorone caproate (16), geastirone (39), haloprogesterone (11), hydroxyprogesterone (8), hydroxyprogesterone caproate (8), levonorgestrel (33) (previously dextrnorgestrel), medrogestone (15), medroxypregesterone (10), medrogestone (15), megastrol (13), melengestrol (13), metogest (33), nomegestrol (49), norelgestomin (83), norgesterone (14), norgestimate (35), norgestomet (32), norgestrel (17), norgestrienone (18), oxogestone (19), pentagestrone (14), progestosterone (4), proligestone
(28), promegestone (38), quingestanol (15), quingestrone (13), segesterone (89), tigestol (20), tosagentin (86), trengestone (22), trimegestone (66)

(b) algestone (22) (glucorticoid)

(c) allylestrenol (10), chlormadinone (12), cismadinone (12), delmadinone (23), dimethisterone (8), ethisterone (4), ethynerone (17), etynodiol (13), hydromadinone (12), lynestrenol (13), metynodiol (27), norethisterone (6), norethynodrel (13), norvinisterone (10), clomenterone (15) (antiestrogen), dimepregnen (24) (antiestrogen)

-gestr- see estr

giline

MAO-inhibitors type B

C.3.1.0

(a) clorgiline (23), mofegiline (69), pargiline (13), rasagiline (70), selegiline (39)

-gillin

antibiotics produced by *Aspergillus* strains (16th Report, 1966)

S.6.0.0

(a) fumagillin (1), mitogillin (17)

(c) mitosper (24), nifungin (24)

gli (x) antihyperglycaemics

(1) sulfonamide derivatives: gliamilide (33), glibenclamide (18), glibornuride (22), glibutimine (31), glicaramide (28), glicetanile (37), gliclazide (25), (deleted: glidanile (23)), gliconamide (44), gidazamide (24), gliflumide (33), glimepiride (53), gliclazide (25), glipizide (27), gliquidone (28), gisamuride (45), gliplamid (58) (previously glipentide (27)), glisisamid (43), glisismide (43), glisexepide (24), glybuthiazol (8), glybuzole (15), glyclopyridamide (17), glycyclamid (12), glyhexamide (15), glyciride sodium (15), glyoctamide (14), glylaxamide (14), glylaxamide (14), glypantid (USAN only), glypanidamid (13), glyprothiazol (8), glysobuzole (12)
INN – The use of stems

(78), naglivan (65), nateglinide (77), piragliatin (97), pirogliride (40), repaglinide (65), teglicar (91), tiebiglisse (64), voglibose (65)

3. peptide: seglitide (57)

(b) cromoglicate lisetil (72), cromoglicic acid (18), ioglicic acid (33), ioxaglic acid (37), sulglicotide (29) (treatment of peptic ulcers), tropigline (08)

(c) acetohexamide (12), butadiazamide (10), carbutamide (36), chlorpropamide (8), heptolamide (12), metahexamide (10), palmoxiric acid (48), thiohexamide (12), tolazamide (12), tolbutamide (6), tolvapamide (12), tolyprramide (13)

gly-

prior to revision of the General Principles

(a) glybuthiazol (08), glybuzole (15), glyclopyramide (17), glycyclamide (13), glyhexamide (15), glymidine sodium (15), glyoctamide (14), glypinamide (13), glyprothiazol (08), glysobuzole (12)

(c) glycerol (4), glycobiarsol (l), glycopyrronium bromide (12)

-gliflozin sodium glucose co-transporter inhibitors, phlorizin derivatives

(atigliflozin (100), canagliflozin (102), dapagliflozin (97), empagliflozin (104), ipragliflozin (103), luseogliflozin (104), remogliflozin etabonate (98), sergliflozin etabonate (98), tofogliflozin (103)

-glitip dipeptidyl aminopeptidase–IV inhibitors

M.5.2.0

(a) alogliptin (96), anagliptin (103), bisegliptin (103), carmegliptin (98), denagliptin (94), dutoglitiptin (100), gemigliptin (103), gosogliptin (101), linagliptin (99), melogliptin (99), saxagliptin (92), sitagliptin (94), teneligliptin (99), vildagliptin (90)

-glitaz peroxisome proliferator activating receptor-γ (PPAR-γ) agonists USAN

(USAN: PPAR agonists (not thiazolidene derivatives))

M.5.2.0

(a) aleglitazar (95), cevoglitazar (94), farglitazar (84), imiglitzazar (91), indegllitazar (100), muroglitazar (90), naveglitazar (92), oxeglitazar (88), peligllitazar (92), pemaglitazar (92), ragaglitazar (85), reglitzazar (87), sipoglitazar (93), sodelglitazar (95), tesaglitazar (85)

-glitazone peroxisome proliferator activating receptor-γ (PPAR-γ) agonists, thiazolidinedione derivatives

USAN

(USAN: PPST agonists (thiazolidene derivatives))

M.5.2.0

(a) ciglitazone (50), balaglitazone (84), darglitazone (69), edaglitazone (91), englitazone (64), lobeglitazone (95), netoglitazone (85), pioglitazone (60), rivoglitazone (87), rosiglitazone (78), troglitazone (69)

(c) efatutazone (102)
-gliflozin  see gli

-gliptin  see gli

-glitazar  see gli

-glitazone  see gli

-glumide  cholecystokinin antagonists, antiulcer, anxiolytic agents

USAN

J.0.0.0/C.1.0.0

(a) amiglumide (85), dexloxiglumide (65), itriglumide (82), lorglumide (56), loxiglomide (57), proglumide (16), spiroglumide (70), tomoglumide (56)

-glutide  see tide

-golide  dopamine receptor agonists, ergoline derivatives

E.1.1.0

(a) adroglide (82), naxagolide (60), pergolide (41), quinagolide (62), voxergolide (61)

(c) rotigotine (83)

-gosivir  see vir

-gramostim  see -stim

-grastim  see -stim
-grel-  platelet aggregation inhibitors

I.2.1.0  (USAN: -grel- or -grel: platelet aggregation inhibitors, primarily platelet P2Y12 receptor antagonists)

(a)  anagrelide (42), camonagrel (61), cangrelor (97), clopidogrel (57), dazmegrel (51), elinogrel (101), furegrelate (53), isbogrel (59), itazigrel (56), midazogrel (53), nafagrel (64), nicogrelate (48), oxagrelate (47), ozagrel (55), pamicogrel (70), parogrelil (94), pirmagrel (53), prasugrel (91), regrelor (97), ridogrel (59), rolafagrel (65), samixogrel (72), sarpogrelate (63), satigrel (67), sunagrel (52), temanogrel (103), terbogrel (75), ticagrelor (95), trifenagrel (53)

-icam  anti-inflammatory, isoxicam derivatives

A.4.2.0  (USAN: anti-inflammatory agents (isoxicam type))

(a)  ampiroxicam (56), droxicam (52), enolicam (45), isoxicam (30), lornoxicam (59), meloxicam (52), piroxicam (32), sudoxicam (27), tenoxicam (44), tesaricam (25)
-ifene  antiestrogens, clomifene and tamoxifen derivatives

(Q.2.1.0
L.6.0.0)

\[
\begin{array}{c c}
\text{clomifene} & \text{R} & \text{Cl} & \text{C}_2\text{H}_5 \\
\text{tamoxifen} & \text{R}' & \text{CH}_3 & \\
\end{array}
\]

(a) acolbifene (86), clomifenoxide (54), tesmilifene (81)
-oxifene: afimoxifene (95), arzoxifene (80), bazedoxifene (86), droloxifene (53), idoxifene (68), lasofoxifene (81), levormeloxifene (73), miproxifene (74), ormeloxifene (69), pipendoxifene (84), raloxifene (54), tamoxifen (28), trioxifene (41), zindoxifene (54)
-mifene: clomifene (12), enclomifene (33), fispemifene (89), nitromifene (33), ospemifene (85), panomifene (58), sivifene (99), toremifene (53), zuclomifene (33)

(b) dextropropoxyphene (7), levopropoxyphene (7), suloxifen (30) (bronchodilator)

(c) nafoxidine (16)

-igetide  see -tide

-ilide  class III antiarrhythmics, sematilide derivatives

H.2.0.0 (USAN: class III antiarrhythmic agents)

(a) ambasilide (59), artilide (67), azimilide (72), dofetilide (65), ersentilide (72), ibutilide (63), ipazilide (62), risotilide (62), sematilide (58), trecetilide (79)

(b) bromacrylride (13), ftaxilide (32), gliamilide (33)

imex (d)  immunostimulants

S.7.0.0

(a) azimexon (40), forfenimex (55), imexon (37), roquinimex (53), ubenimex (56)
-imibe  acyl CoA: cholesterol acyltransferase (ACAT) inhibitors, antihyperlipidaemics  
M.3.0.0  
(a) avasimibe (80), canosimibe (100), efucimibe (84), eldacimibe (76), ezetimibe (83), lecimibide (70), octimibate (52), pactimibe (89)  

-imod immunomodulators, both stimulant/suppressive and stimulant  
S.7.0.0  
(a) agatolimod (98), apilimod (95), atiprimod (75), cridanimod (83), defoslimod (79), epetirimod (97), esonarimod (79), fingolimod (91), forigerimod (104), golotimod (97), glaspimod (74), iguratimod (86), imiquimod (66), ivarimod (60), laquinimod (85), litenimod (96), paquinimod (94), pidotimod (63), ponesimod (103), rabeximod (97), resiquimod (82), rintatolimod (102), siponimod (105), sotirimod (94), susalimod (73), tasquinimod (93), tiprotimod (57)  

-mapimod mitogen-activated protein (MAP) kinase inhibitors  
(a) balamapimod (96), bentamapimod (98), dilmapimod (102), doramapimod (88), losmapimod (101), pamapimod (96), talmapimod (99), semapimod (89)  

-imus immunosuppressants (other than antineoplastics)  
S.7.0.0  
(a) abetimus (81), anisperimus (82), gusperimus (68), laflunimus (70), manitimus (93), napirimus (60), tresperimus (75), vidofludimus (103)  

-rolimus immunosuppressants, rapamycin derivatives  
(a) everolimus (82), olcorolimus (105), pimecrolimus (81), ridaforolimus (101), sirolimus (69), tacrolimus (66), temsirolimus (94), umirolimus (103), zotarolimus (94)  

-ine (d)  alkaloids and organic bases  
(a) 1657 (19.5%) INNs ending in -ine in Lists 1-105 of proposed INNs  

-inostat see stat
io- (x)  iodine-containing contrast media

U.1.1.0

(a)  iobenzamic acid (14), iobitridol (68), iobutoic acid (20), iocarmic acid (22), iocetamic acid (18), iodamide (15), iodecimol (51), iododextril (1), iodixanol (53), iodophthalein sodium (1), iodoxamic acid (26), iofendylate (12), ioforniminol (103), iofratal (67), ioglicic acid (33), ioglucol (41), ioglucopside (41), ioglycamic acid (15), iohexol (43), iodidonic acid (26), iolixanic acid (26), iomelamic acid (26), iremol (54), iomorinic acid (37), iopamidol (40), iopanoic acid (1), iopentol (52), iophoeic acid (4), ioprocrunic acid (39), iopromide (44), iopronic acid (28), iopydol (14), iopydine (14), iosarcol (54), iosefamic acid (14), ioseric acid (33), iosimenol (88), iosimide (50), iosulamide (39), iosumetic acid (33), iotalamic acid (13), iotasul (43), iotetric acid (37), iotronic acid (28), iotriside (60), iotrizoic acid (22), iotrolan (51), iotroxic acid (32), ioversol (56), ioxabrolic acid (53), ioxaglic acid (37), ioxilan (59), ioxitalamic acid (22), ioxotrizoic acid (33), ioxomic acid (24)

(c)  adipiodone (4), bunamiodyl (10), dimethiodal sodium (1), diodone (1), ethyl carbtrizoate (12), ethiodal sodium (1), metrizamide (26), pheniodol sodium (1), phenobutirol (6), propyl docetrizoate (10), propyliodone (1), sodium acetrizoate (4), sodium diprotrizoate (6), sodium metrizoate (13), sodium tyropanoate (12)

io(d)-/-io-  radiopharmaceuticals, iodine-contained

(a)  ethiodized oil (131I) (24), iobenguane (131I) (57), iocanlidic acid (123I) (77), iodinated (125I) human serum albumin (24), iodinated (131I) human serum albumin (24), iodine (124I) girentuximab (101), iodocetyl acid (123I) (47), iodocholesterol (131I) (39), iodofiltic acid (125I) (95), iofetamine (123I) (105), ioflubenzamide (131I) (103), ioflupane (123I) (75), iopride (123I) (73), iomazenil (123I) (66), iometin (125I) (24), iometin (131I) (24), iometopane (125I) (76), sodium iodide (125I) (24), sodium iodide (131I) (24), sodium iodohippurate (131I) (24), sodium iotalamic acid (125I) (24), sodium iotalamate (131I) (24)

(c)  fibrinogen (125I), macrosalb (131I) (33), rose bengal (131I) sodium (24), tolpovidone (131I) (24)

-usan  thrombin inhibitors, hirudin derivatives

I.2.1.0  (USAN: anticoagulants (hirudin type))

bivalirudin (72), desirudin (70), lepirudin (73), pegmusirudin (77)
### -isomide

**class I antiarrhythmics, disopyramide derivatives**

H.2.0.0

![Chemical Structure](image)

(a) actisomide (60), bidisomide (63), pentisomide (59)

(c) disopyramide (12)

---

### -ium

**quaternary ammonium compounds**

(USAN: -ium or -onium: quaternary ammonium derivatives)

#### E.3.0.0 neuromuscular blocking agents with a flexible structure

(a) azamethonium bromide (1), decamethonium bromide (1), dicolinium iodide (25), dimecolinium iodide (14), fubrogonium iodide (18), hexamethonium bromide (1), mebezonium iodide (16), oxapropanium iodide (1), oxydipentonium chloride (1), pentamethonium bromide (1), pentolonium tartrate (4), prodeconium bromide (6), stilonium iodide (32), suxamethonium chloride (1), suxethonium chloride (1), tetralammonium bromide (1), tiametonium iodide (15), trepirium iodide (25)

(c) gallamine triethiodide (1)

#### E.3.0.0 neuromuscular blocking agents with rigid structure

(USAN: -curium, also -curonium; neuromuscular blocking agents; quaternary also ammonium compounds)

(a) -curonium: alcuronium chloride (17), candocuronium iodide (70), dacuronium bromide (21), pancuronium bromide (19), pipecuronium bromide (69), rapacuronium bromide (78), rocuronium bromide (66), stercuronium iodide (21), vecuronium bromide (46)

- -curium (d) (curare-like substances): atracurium besilate (42), cisatracurium besilate (73), doxacurium chloride (58), gantacurium chloride (91), mivacurium chloride (58), trucurium iodide (22), truxipicurium iodide (22)

- -others: dimethyltubocurarinium chloride (1), fazadinium bromide (32), hexafluronium bromide (12), laudexium metilsulfate (4), pentacyonium chloride (6), phenactropinium chloride (8), pipocurarium iodide (11), thiazinamium metilsulfate (37), trimethidinium methosulfate (8)

(c) tubocurarine chloride (1)
E.1.0.0 cholinergic agents

(a) aclatoniun napadisilate (44), ambenonium chloride (6), benzpyrinium bromide (1), carpronium chloride (23), demecarium bromide (10), furtrethonium iodide (1)

(c) acetylcholine chloride (4), charbacol (4), choline alfoscerate (29), choline chloride (4), choline gluconate (1), choline salicylate (15) (analgesic), choline theophyllinate (8) (smooth muscle relaxant), methacholine chloride (1), nitricoline perchlorate (6) (anti hypertensive), distigmine bromide (16), ecothiopate iodide (6), neostigmine bromide (4), obidoxime chloride (16), pralidoxime iodide (10), pyridostigmine bromide (6)

E.2.0.0 anticholinergic agents

(a) aclidinium bromide (100), benzilonium bromide (13), benzopyronium bromide (12), beperidium (57), bevonium metilsulfate (19), butropium bromide (30), ciclonium bromide (19), ciclotropium bromide (50), cimetropium bromide (51), cildinium bromide (6), cyclopyrronium bromide (12), dimetipirium bromide (12), diponium bromide (15), doteonium bromide (24), droclidinium bromide (33), emepronium bromide (18), etipirium iodide (22), fencloxonium metilsulfate (20), fenpiverinium bromide (26), fentonium bromide (29), flutropium bromide (50), glycopyrronium bromide (12), heteronium bromide (14), hexasonium iodide (15), hexopyrronium bromide (13), ipratropium bromide (31), methanthelinium bromide (1), methylbenacetylum bromide (34), metocinium iodide (26), nolinium bromide (37), otilonium bromide (38), oxapium iodide (26), oxitefonium bromide (18), oxitropium bromide (36), oxyphenonium bromide (1), oxyprynonium bromide (13), oxysium iodide (15), pentaiperium metilsulfate (26), prifinium bromide (20), ritropirronium bromide (33), sintropium bromide (47), sultrpionium (18), tematropium metilsulfate (64), tiemonium iodide (13), timentium bromide (29), tioctropium bromide (67), tiquizium bromide (47), trantelinium bromide (24), trosptium chloride (25), xenytropium bromide (15)

(c) atropine methonitrate (4), buzepide metiodide (14), chlorisondamine chloride (6), diphenamal metilsulfate (4), homatropine methylbromide (1), isopropramide iodide (8), mepenzolate bromide (10), octapromine methylbromide (10), parapenzolate bromide (14), pipenzolate bromide (6), poldine metilsulfate (11), propantheline bromide (1), propyzomazine bromide (12), tridihexethyl iodide (6), tropenziline bromide (11), thihexinol methylbromide (1), tricyclamol chloride (4)

S.2.3.0 surfactants used as antibacterials and antiseptics

(a) acriflavinium chloride (1), amantanium bromide (39), benzalkonium chloride (1), benzethonium bromide (1), benzododecinium chloride (1), benzoxonium chloride (36), cefalonium (16), cefmepidium chloride (57), cetalkonium chloride (15), cethexonium chloride (36), cetheronium bromide (1), cetylpyridinium chloride (1), chlorphenoctium amsonate (8), ceditonium bromide (15), denatonium benzoate (15), dequilibrium chloride (8), disiquonium chloride (55), dodeclonium bromide (16), dofamium chloride (21), fluidazonium chloride (33), furazolium chloride (15), halopenium chloride (10), hedauquinium chloride (8), lapirium chloride (27), lauralkonium chloride (62), laurcupium bromide (70), lauroxolinium acetate (12), mecetronium etilsulfate (51), metalkionium chloride (60), methylbenzethonium chloride (1), methylrosoanilium chloride (1), methylthioninium chloride (1), miripirium chloride (63), mirastalkonium chloride (41), octafonium chloride
(16), opra-tonium iodide (76), penoctonium bromide (20), pirralkonium bromide (19), polidronium chloride (67), polixetonium chloride (70), prolonium iodide (14), sanguinarium chloride (68), sepazonium chloride (34), tetradonium bromide (18), tibezonium iodide (32), tiodonium chloride (36), toliodium chloride (36), toloconium metilsulfate (17), tonzonium bromide (14), triclobisonium chloride (10)

(c) domiphen bromide (23)

**other agents**

alagebrium chloride (91), albitiazolium bromide (101), amezinium metilsulfate (36), amprolium chloride (16), azaspirium chloride (25), bephemium hydroxynaphthoate (11), bibenzo-nium bromide (12), bidimazium iodide (27), bretylonium tosilate (10), butopyrammonium iodide (8), carcainium chloride (36), clofilium phosphate (42), datelliptium chloride (57), detajmium bitartrate (34), dibropidium chloride (51), ditercalinium chloride (49), edrophonium chloride (4), elliptinium acetate (43), emilium tosilate (37), enisamium iodide (101), famiraprinium chloride (58), feniodium chloride (23), gallium ($^{67}$Ga) citrate (33), homidium bromide (36), isavanazonium chloride (96) isometamidium chloride (18), mefenidramium metilsulfate (52), meldonium (86), mequitamium iodide (61), nolpitantium besilate (75), pinaverium bromide (32), pirdonium bromide (28), prajmalium bitartrate (23), pranolium chloride (32), pretamazium iodide (29), propagermanium (65), prospidium chloride (22), pyritidium bromide (16), pyrvinium chloride (6), quindonium bromide (14), quinuclium bromide (40), repagermanium (63), rimazolium metilsulfate (26), roxolinium metilsulfate (33), samarium ($^{153}$Sm) lexidronam (74), sepantronium bromide (105), sevitropium mesilate (56), spirogermanium (43), stilbazium iodide (13), thenium closilate (12), tipetropium bromide (42), tolonium chloride (4), trazium esilate (54), trethinium tosilate (14), troxonium tosilate (13), troxypyrrolonium tosilate (13)

(c) alazanine triclofenate (13) (anthelminthic), colfosceril palmitate (64) (pulmonary surfactant), dithiazanine iodide (8) (anthelminthic), hexadimethrine bromide (8) (heparin antagonist)

---

**-izine (-yzine)**

**diphenylmethyl piperazine derivatives**

![Diphenylmethyl piperazine Derivative](image)

(a) **antihistaminics**: G.2.0.0: buclizine (4), cetirizine (51), chlorcyclizine (1), clocinizine (15), cyclizine (1), efetirizine (71), elbanizine (60), flotrenizine (48), *levocetirizine* (78), lomerizine (68), pibaxizine (62), trenizine (48)

homochlorcyclizine (10) (serotonin antagonist)

**tranquillizers**: etodroxizine (18), hydroxyzine (6)
various: benderizine (40) (antiarrhythmic), decloxizine (19) (respiratory insufficiency), ropizine (36) (anticonvulsant)

-rizine antihistaminics/cerebral (or peripheral) vasodilators

belarizine (36), buterizine (42), cinnarizine (11), dotarizine (50), flunarizine (22), lifarizine (66), tagorizine (72), tamolarizine (66), trelnarizine (62)

chemically related: pipoxizine (32) (respiratory insufficiency)

(b) phenothiazine derivatives: chloracyzine (12) (vasodilator), fluacizine (25) (sedative), moracizine (25) (antiarrhythmic), tiracizine (62) (antiarrhythmic)

benzilate esters: benactyzine (6) (tranquillizer), benaprizine (26) (anti-parkinsonian)

phenylpiperazine: dimetholizine (10) (antiallergic), dropropizine (18)/levodropropizine (64) (antitussive)

antibiotic "cef": cefatrizine (34)

pyrazine derivatives: ampyzine (15) (central nervous stimulant), triampyzine (15) (anticholinergic)

indoloquinolines (anticholinergic): metoquizine (17), toquizine (17)

(c) medibazine (16)

-kacin antibiotics, kanamycin and bekamycin derivatives (obtained from *Streptomyces kanamyceticus*)

S.6.3.0 (USAN: antibiotics obtained from *Streptomyces kanamyceticus* (related to kanamycin))

(a) amikacin (30), arbekacin (56), butikacin (41), dibekacin (31), propikacin (43)

(c) bekamycin (24), kanamycin (10)

other aminoglycoside antibiotics:

*Strept. griseus*: dihydrostreptomycin (1) (semisynthetic), streptomycin (1), streptoniazid (13) (semisynthetic)
**Strept. tenebrarius**: apramycin (31), nebramycin (19) (mixture of several antibiotics, including apramycin and tobramycin), tobramycin (28)

**Bacillus circularis**: butirosin (25)

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<table>
<thead>
<tr>
<th>Stem</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>-kalant</td>
<td>Potassium channel blockers</td>
<td>(USAN: potassium channel antagonists)</td>
</tr>
<tr>
<td>H.2.0.0</td>
<td>adekalant (83), almokalant (64), clamikalant (81), inakalant (95), nifekalant (75), pinokalant (82), terikalant (66), vernakalant (96)</td>
<td></td>
</tr>
</tbody>
</table>

| -kalim | Potassium channel activators, antihypertensive | (USAN: potassium channel agonists) |
| H.3.0.0 | aprikalim (64), bimakalim (64), cromakalim (58), levromakalim (66), emakalim (66), mazokalim (75), rilmakalim (65), sarakalim (81) |

<table>
<thead>
<tr>
<th>-kef-</th>
<th>Enkephalin agonists</th>
<th>(USAN: enkephalin agonists (various indications))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>casokefamide (65), frakefamide (81), metenkefalin (97), metkefamide (44)</td>
<td></td>
</tr>
</tbody>
</table>

| -kin | Interleukin type substances | (USAN: interleukin analogues and derivatives) |
| S.7.0.0 | IL-1: -nakin interleukin-1 analogues and derivatives -onakin: interleukin-1 α analogues and derivatives: pifonakin (77) -benakin: interleukin-1 β analogues and derivatives: mobenakin (72) |
|       | IL-2: -leukin interleukin-2 analogues and derivatives: adargileukin alfa (89), aldesleukin (63), celmoleukin (65), denileukin diflitox (78), teceleukin (54) pegaldesleukin (74), tucotuzumab celmoleukin (95) |
|       | IL-4: -trakin interleukin-4 analogues and derivatives: binetraclin (82) |
|       | IL-6: -exakin interleukin-6 analogues and derivatives: atexakin alfa (72) |
INN – The use of stems

IL-8: -octakin interleukin-8 analogues and derivatives: emoctakin (74)

IL-10: -decakin interleukin-10 analogues and derivatives: ilodecakin (81)

IL-11: -elvekin interleukin-11 analogues and derivatives: oprelvekin (76)

IL-12: -dodekin interleukin-12 analogues and derivatives: edodekin alfa (79)

IL-13: -tredakin interleukin-13 analogues and derivatives: cintredakin besudotox (92)

IL-18: -octadekin interleukin-18 human analogues and derivatives: iboctadekin (92)

tadekinig alfa (90) (fraction of IL-18 human)

IL-21 -enicokin interleukin-21 human analogues and derivatives: denenicokin (99)

(c) IL-3: -plestim interleukin-3 analogues and derivatives:
muplestim (72), daniplestim (76)

USAN

-kinra interleukin receptor antagonists

IL-1 -nakinra interleukin-1 receptor antagonists: anakinra (72)

IL-4 -trakinra interleukin-4 receptor antagonists: pitrakinra (84)

USAN

-kiren renin inhibitors

H.3.0.0

(a) aliskiren (83), ciprokiren (69), ditekiren (62), enalkiren (61), remikiren (66), terlakiren (66), zankiren (70)

-efacept see -cept

-leukin see -kin

-listat see -stat
-lubant  leukotriene B\(_4\) receptor antagonists

(USAN: leukotriene receptor antagonists (treatment of inflammatory skin disorders))

U.3.0.0

(a)  amelubant (85), moxilubant (78), ticolubant (76)

-lukast  leukotriene receptor antagonists, see -ast

-lutril  see -tril

-mab  monoclonal antibodies (see also Annex 3)

S.7.0.0

-amab  rat origin

-emab  hamster origin

-imab  primate origin

-omab  mouse origin:

(b(a)  bacterial: edobacomab (69)

(co(l)  colon: edrecolomab (74), nacolomab tafenatox (71)

(go(v)  ovary (tumours): abagovomab (95), igovomab (74), oregovomab (86)

(l(i)  lymphocyte: afelimomab (72), dorlimomab aritox (66), elsilimomab (89), enlimomab (70), enlimomab pegol (77), faralimomab (76), gavilimomab (84), inolimomab (71), maslimomab (66), nerelimomab (76), odulimomab (73), telimomab aritox (66), vepalimomab (80), zolimomab aritox (69)

(c(i)  cardiovascular: biciromab (66), imciromab (66)

(le(s)  inflammatory lesions: besilesomab (92), lemalesomab (84), sulesomab (75), technetium (\(^{99m}\)Tc) fanolesomab (86)

(pr(o)  tumour (prostate): capromab (70)

(tt(u)  tumour (miscellaneous): altumomab (68), anatumomab mafenatox (79), arcitumomab (74), bectumomab (75), blinatumomab (100), detumomab (70), epitumomab (82), epitumomab cituxetan (89), ibritumomab tiuxetan (81), minretumomab (80), mitumomab (82), moxetumomab pasudotox (102),
naptumomab estafenatox (96), racotumomab (100), satumomab (67),
taplitumomab paptox (84), technetium ($^{99m}$Tc) nofetumomab merpentan (76),
technetium ($^{99m}$Tc) pintumomab (75), tenatumomab (98), tositumomab (80)

**Others:** catomaxomab (92), ertumaxomab (92)

**-umab**

**human origin:**

*b(a)* bacterial: nebacumab (66), raxibacumab (92)

*c(i)* cardiovascular: icrucumab (104), ramucirumab (100), vesencumab (104)

*f(u)* fungal: efungumab (95)

*k(i)* interleukin: briakinumab (101), canakinumab (97), fezakinumab (101),
secukinumab (102), sirukumab (105), tralokinumab (102), ustekinumab (99)

*l(i)* immunomodulator: adalimumab (82), atorolimumab (80), belimumab (89),
bertilimumab (88), brodalumab (105), carlumab (104), foralumab (103),
 fresolimumab (101), golimumab (91), ipilimumab (94), lerdelimunab (83),
mavrilimumab (102), metelimumab (86), morolimumab (79), namilumab (104),
oxelumab (103), sifalimumab (101), tabalumab (105), tremelimumab (97),
urelumab (104), zanolimumab (90), ziralimumab (84)

*s(o)* bone: denosumab (94)

*t(u)* tumour: adecatumumab (90), cixutumumab (100), conatumumab (99),
daratumumab (101), drozitumab (103), figitumumab (100), ganitumab (103),
glembatumumab (102), intetumumab (101), iratumumab (94), lexatumumab (95),
lucatumumab (98), mapatumumab (93), narnatumab (105), necitumumab (100),
ofatumumab (93), olaratumab (103), piritumumab (89), panitumumab (96),
radretumab (104), rilotumumab (101), robatumumab (100),
teprotumumab (101), votumumab (70), zalutumumab (93), yttrium ($^{90}$Y)
clivatuzumab tetraxetan (102)

*v(i)* viral: exbivirumab (91), foravirumab (99), libivirumab (91), rafivirumab (99),
regavirumab (71), sevirumab (66), suvizumab (102), tuvirumab (66)

**Other:** atinumab (104), fulranumab (104), stamulumab (94), gantenerumab (97),
roledumab (103)

**-ximab**

**chimeric origin**

*b(a)* bacterial: pagibaximab (93)

*c(i)* cardiovascular: abciximab (70), volociximab (93)
<table>
<thead>
<tr>
<th>Stem</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>l(i)</td>
<td>Immunomodulator: basiliximab (76), clenoliximab (77), galiximab (89), infliximab (77), keliximab (76), lumiliximab (90), priliximab (72), teneliximab (87), vapaliximab (87)</td>
</tr>
<tr>
<td>me(l)</td>
<td>Melanoma: ecromeximab (87)</td>
</tr>
<tr>
<td>t(u)</td>
<td>Tumor: amatuximab (104), bavituximab (95), brentuximab vedotin (103), cetuximab (82), ensituximab (103), girentuximab (101), indatuximab ravidansine (105), iodine $^{124I}$ girentuximab (101), rituximab (77), siltuximab (100), ubiliximab (104)</td>
</tr>
<tr>
<td>-xizumab</td>
<td>Chimeric/humanized: otelixizumab (98)</td>
</tr>
<tr>
<td>-zumab</td>
<td>Humanized origin</td>
</tr>
<tr>
<td>anib</td>
<td>Angiogenesis inhibitor: ranibizumab (90)</td>
</tr>
<tr>
<td>b(a)</td>
<td>Bacterial: tefibazumab (92)</td>
</tr>
<tr>
<td>c(i)</td>
<td>Cardiovascular: alacizumab pegol (98), bevacizumab (83), etaracizumab (99), tadocizumab (94)</td>
</tr>
<tr>
<td>k(i)</td>
<td>Interleukin: anrukinzumab (98), enokizumab (104), gevokizumab (104), ixekizumab (105), lebrikizumab (101), olokizumab (103)</td>
</tr>
<tr>
<td>l(i)</td>
<td>Lymphocyte: apolizumab (87), aselizumab (88), benralizumab (102), cedelizumab (77), certolizumab pegol (90), daclizumab (78) (previously: dacliximab), eculizumab (87), efalizumab (85), erlizumab (84), etrolizumab (104), fontolizumab (87), ibalizumab (97), itolizumab (103), mepolizumab (81), mogamulizumab (104), natalizumab (79), ocrelizumab (94), omalizumab (84), ozoralizumab (105), palivizumab (79), pascolizumab (87), pateclizumab (105), pexelizumab (85), reslizumab (85), rontalizumab (101), rovelizumab (81), ruplizumab (83), samalizumab (103), siplicuzumab (87), talizumab (89), teplizumab (97), tocilizumab (90), toralizumab (87), tregalizumab (104), vatelizumab (105), vedolizumab (100), visilizumab (84)</td>
</tr>
<tr>
<td>s(o)</td>
<td>Bone: blosozumab (105)</td>
</tr>
<tr>
<td>tox(a)</td>
<td>Toxin as target: urtoxazumab (90)</td>
</tr>
<tr>
<td>t(u)</td>
<td>Tumor: (miscellaneous): alemtuzumab (83), bivatuzumab (83), cantuzumab mertansine (105), cantuzumab ravidansine (105), citatuzumab bogatox (99), dacetuzumab (98), dalotuzumab (103), elotuzumab (100), enavatuzumab (104), epratuzumab (82), farletuzumab (100), ficlatuzumab (105), gentuzumab (83), inotuzumab ozogamicin (92), labetuzumab (85), lintuzumab (76), lorvotuzumab mertansine (103), matuzumab (88), milatuzumab (98), nimotuzumab (94), obinutuzumab (101), onartuzumab (104), oportuzumab</td>
</tr>
</tbody>
</table>
monatox (100), pertuzumab (89), sibrotuzumab (81), sontuzumab (94),
tigatuzumab (98), trastuzumab (78), trastuzumab emtansine (103),
tucotuzumab celmoleukin (94), veltuzumab (98), yttrium (\(^{90}\)Y) tacatuzumab
tetraseteran (93)

\(v(i)\) 

viral: felvizumab (77), motavizumab (95)

Other: 

bapineuzumab (93), crenezumab (105), ponezumab (104), solanezumab (100),
tanezumab (99)

(c) muromonab CD3 (59)

---

- mantadine
- mantine
- mantone

(USAN: -mantadine or -mantine: antivirals/antiparkinsonians (adamantane derivatives))

(a) antiviral: S.5.3.0: amantadine (15), rimantadine (17), somantadine (51), tromantadine (28)

antiparkinsonian: E.2.0.0: carmantadine (31), dopamantine (31), memantine (35)

immunostimulant: S.7.0.0: idramantone (71)

(b) anthelminthic: S.3.1.0: dimantine (14)

(c) adafenoxate (48) (nootropic agent), adamexine (36) (mucolytic), adapalene (64)
(antiacne agent), adaprolol (63) (β-adrenoreceptor antagonist), adatanserin (70)
(serotonin receptor antagonist), amantanium bromide (39) (disinfectant), amantocillin
(17) (antibiotic), arterolane (97) (antimalarial), bolmantalate (16) (anabolic),
meclizinerat (88) (neurotensin antagonist), mantabegron (88) (β3-adrenoreceptor
agonist), saxagliptin (92) (antidiabetic), vildagliptin (90) (antidiabetic)

-mapimod see -imod

-mastat see -stat
**-meline**

Cholinergic agents (muscarine receptor agonists/partial antagonists used in the treatment of Alzheimer's disease)

E.1.0.0 (USAN: cholinergic agonists (arecoline derivatives used in the treatment of Alzheimer's disease))

![Chemical structure](image)

alvameline (79), cevimeline (76), itameline (77), milameline (74), sabcomeline (76), tazomeline (77), xanomeline (70)

**-mer or -mer-**

1-mercury-containing drugs, antimicrobial or diuretic (deleted from General Principles in List 28 prop. INN)

(a) S.2.2.0 antimicrobial: meralein sodium (13), merbromin (1), mercurobutol (1), otimerate sodium (51), phenylmercuric borate (4), sodium timerfonate (13), thiomersal (1)

1-mer- and -mer- can be used for any type of substances and are no longer restricted to use in INNs for mercury-containing drugs (18th Consultation on INNs 1988)

N.1.3.0 diuretic: chlormerodrin (4), chlormerodrin (197Hg) (24), meralluride (1), mercaptomerin (1), mercudermamide (1), mercumatilin sodium (4), mercurophylline (1), merisoprol (197Hg) (24) (diagnostic), mersaly (4)

(b) difemerine (17) (spasmolytic), dimercaprol (1) (antidote, -SH group), lomerizine (68), (cerebral vasodilator), mercaptopurine (6) (cytostatic, -SH group), nifurmerone (16), pemerid (25), suxemerid (25) (antitussive)

(c) hydrargaphen (10)

**-mer**

Polymers

(a) amilomer (33), azoximer bromide (97), bixalomer (103), cadexomer (60), carbetimer (50), carboromer (21), crilanomer (53), dextranomer (33), eldexomer (60), exatecan alideximer (89), hemoglobin glutamer (80), hemoglobin raffimer (89), leuciglumer (68), maletamer (14), poloxamer (34), porfimer sodium (64), sevelamer (77), surfomer (44), tolevamer (88), zinostatin stimalamer (74)

(b) succimer (42)
INN – The use of stems

**-mesine**  
**sigma receptor ligands**  
cutamesine (100), igmesine (68), panamesine (73), siramesine (81)

**-mestane**  
**aromatase inhibitors**  
L.0.0.0 /Q.2.1.0  
(atamestane (54), exemestane (65), formestane (66), minamestane (64), plomestane (66))

**-metacin**  
**anti-inflammatory, indometacin derivatives**  
A.4.2.0  
(BAN: anti-inflammatory substances of the indomethacin group)  
(USAN: -metacin: anti-inflammatory substances (indomethacin type))

(a)  
acemetacin (32), cinmetacin (24), clometacin (27), delmetacin (48) (originally demetacin (42)), duometacin (27), glucametacin (32), indometacin (13), niometacin (33), oxametacin (37), pimetacin (47), proglumetacin (35), sermetacin (36), talmetacin (46), zidometacin (39)

other anti-inflammatory, indole derivatives: etoprindole (22), indopine (12), indoxole (17), nictindole (28)

**-met(h)asone see pred**

**-micin**  
**antibiotics obtained from various *Micromonospora***  
(S.6.5.0)  
(USAN: antibiotics (*Micromonospora* strains))

astromicin (44), betamicin (38), etisomicin (47), evernimicin (82), fidaxomicin (100), gentamicin (22), isepamicin (54), maduramicin (52), megalomicin (37), micronomicin (45), mirosmicin (58), netilmicin (36), ozogamicin (83), pentsomicin (41), repromicin (37), rosaramicin (41) (prev. rosamicin), semduramicin (60), sisomicin (25)

**-mifene**  
see -ifene
-milast  see -ast

mito-  (d)  antineoplastics, nucleotoxic agents (deleted from General Principles in List 24 prop. INN)

L.0.0.0

(a) mitobronitol (20), mitocarcin (25), mitoclomine (18), mitoflaxone (60), mitogillin (17), mitoguazone (20), mitolactol (26), mitomalcin (19), mitomycin (26), mitonafide (40), mitopodozide (17), mitoquidone (54), mitosper (24), mitotane (21), mitotenamine (17), mitoxantrone (44), mitozolomide (51)

(c) mitindomide (48)

-monam  monobactam antibiotics

S.6.0.0

(a) carumonam (51), gloximonam (54), oximonom (54), pirazmonam (58), tigemonam (57)

(c) aztreonam (48)

-morelin  see -relin

-mostat  see -stat

-mostim  see -stim

-motine  antivirals, quinoline derivatives (19th Report 1970)

S.5.3.0  (USAN: antivirals (quinoline derivatives))

(a) famotine (23), memotine (22)
**-moxin** (d)  *monoamine oxidase inhibitors, hydrazine derivatives*

C.3.1.0

(a)  benmoxin (20), cimemoxin (17), domoxin (14), octamoxin (15)

(c)  carbenzide (11), etryptamine (12), fenoxypopazine (12), iprolozide (13), iproniazid (1), isocarboxazid (11), mebanazine (15), nialamide (10), pargyline (13), phenelzine (10), pheniprazine (11), tranylcypromine (11)

**-mulin**  *antibacterials, pleuromulin derivatives*

S.6.0.0

(a)  azamulin (54), pleuromulin (35), retapamulin (91), tiamulin (35), valnemulin (74)

(b)  nonathymulin (56), thymostimulin (45)

**-mustine**  *antineoplastic, alkylating agents, (β-chloroethyl)amine derivatives*

L.2.0.0  (USAN: antineoplastic agents (chlorethylamine derivatives))

- \[
\begin{align*}
\text{R} & \quad \text{N} \\
\text{Cl} & \quad \text{Cl}
\end{align*}
\]

(a)  alestramustine (68), ambamustine (60), atrimustine (61), bendamustine (48), bofumustine (44), carmustine (24), ditiomustine (49), ecomustine (61), elmustine (49), estramustine (24), fotemustine (57), galamustine (61), laromustine (98), lomustine (27), mannomustine (8), neptamustine (48) (originally pentamustine (45)), nimustine (37), prednimustine (31), ranimustine (55), semustine (27), spiromustine (47), tallimustine (68), tauromustine (50), uramustine (13)

(c)  canfosfamide (92), chlorambucil (6), chlormethine (1), chlornaphazine (1), cyclophosphamide (10), defosfamide (12), glufosfamide (77), ifosfamide (23), mafosfamide (51), melphalan (8), melphalan flufenamide (105), metamelfalan (41), mitoclomine (18), mitotene (17), palifosfamide (99), perfosfamide (66), sarcosylsin (17), sufosfamide (36), trichlormethine (11), trofosfamide (23)
-mycin (x)  antibiotics, produced by *Streptomyces* strains (see also -kacin)

S.6.0.0  (USAN: antibiotics, *Streptomyces* strains)

(a)  alvespimycin (96), amfomycin (12), antelmycin (15), apramycin (31), avilamycin (46), azalomycin (26), azithromycin (58), bambermycin (21), bekanamycin (24), berythromycin (26), biocozamycin (38), biniramycin (23), bluensomycin (14), capreomycin (12), carbomycin (1), cethromycin (87), clarithromycin (59), clindamycin (21), coumamycin (15), daptomycin (58), dihydrostreptomycin (1), diproleandomycin (33), dirithromycin (53), efrotomycin (53), endomycin (6), enramycin (23), enviomycin (31), erythromycin (4), estomycin (14 - deleted in List 28), fluorithromycin (51), fosfomycin (25), fosmidomycin (46), gamithromycin (95), ganefromycin (68), hachimycin (23), heliomycin (25), hydroxymycin (8 - deleted in List 28), josamycin (23), kanamycin (10), kitasamycin (13), laidlomycin (61), lexithromycin (65), lincomycin (13), lividomycin (32), maridomycin (32), midecamycin (30), mikamycin (17), mirincamycin (31), momicyn (28), modithromycin (101), natamycin (15), nebramycin (19), neomycin (1), neutramycin (15), oleandomycin (6), paldimycin (55), paromomycin (10), paulomycin (47), pirlimycin (47), primycin (38), pristinamycin (12), ranamycin (20), relomycin (15), retaspimycin (99), ribostamycin (27), rifamycin (13), rokitamycin (53), roxithromycin (54), salinomycin (37), sederamycin (55), solithromycin (104), spectinomycin (13), spiramycin (6), stallimycin (30), steflimycin (20), streptomycin (1), tanespimycin (96), telithromycin (80), terdecamycin (65), tobramycin (28), troleandomycin (24), trospectomycin (53), tulathromycin (87) (vet.), vancomycin (6), viomycin (4), virginiamycin (18)

antibiotics, antineoplastics:
ambomycin (13), antramycin (17), azotomycin (13), bleomycin (23), cactinomycin (15), dactinomycin (18), duazomycin (13), lucimycin (13), mitomycin (26), nogalamycin (16), olivomycin (18), peliomycin (15), peplomycin (44), plicamycin (50) (previously mithramycin (16)), porfiromycin (15), puromycin (15), rufocromomycin (12), sparsomycin (13), talisomycin (41)

antibiotics, antineoplastics, antibacterial:
cirolemycin (21)

antibiotic, antifungal:
hamycin (17), lidimycin (20), rutamycin (14)

(c)  antibiotic, antibacterial:
aspartocin (11), azidamfenicol (14), cetoefenicol (14), chloramfenicol (1), cloramfenicol pantotenate complex (14), cycloserine (6), novobiocin (6), osteogrycin (6), rifamide (15), rifampicin (17), streptoniazid (13), streptovavycin (6), thiamphenicol (10), tylosin (16)

antibiotic, antifungal:
amphotericin B (10), candicidin (17), filipin (20), kalafungin (20), nystatin (6), viridofulvin (16)

antibiotic, antineoplastic:
daunorubicin (20), mitomalcin (19), streptonigrin (14) (deleted in List 33)

see also -rubicin
nab  cannabinoid receptors agonists

(USAN: -nab; or -nab-: cannabinol derivatives)

(a)  cannabinol (23), dronabinol (51), menabitan (49), nabazenil (49), nabilone (49), nabiton (42), naboctate (45), nonabine (47), pirnabin (41), tedalinab (103), tinabinol (49)

(b)  fenabutene (26), guanabenz (26), muromonab-CD3 (59), nabumetone (44), prinaberel (95)

-nabant  cannabinoid receptors antagonists

E.0.0.0

(a)  drinabant (99), ibipinabant (99), otenabant (99), rimonabant (83), rosonabant (97), surinabant (93), taranabant (97)

-nacept  see -cept

-nakin  see -kin

-nakinra  see -kinra

nal-  opioid receptor antagonists/agonists related to normorphine

A.4.1.0  (USAN: narcotic agonists or antagonists (normorphine type))
B.2.0.0

a)  methylnaltrexone bromide (96), nalbuphine (21), naldemedine (105), nalfurafine (87), nalmefene (49) (originally nalmetrene (47)), nalmexone (19), nalorphine (1), naloxegol (105), naloxone (13), naltrexone (29)

(b)  nalidixic acid (13), naluzotan (101)
-naritide  see -tide

-navir  see vir

-nermin  see -ermin

-nercept  see -cept

-nertant  see -tant

-netant  see -tant

-nicate  see nico-

-nicline  nicotinic acetylcholine receptor partial agonists / agonists

E.1.1.2

(a)  altinicline (82), dianicline (93), facinicline (105), ispronicline (93), pozanicline (100), rivanicline (93), sofinicline (100), tebanicline (86), varenicline (89)

nico- or nic-  nicotinic acid or nicotinoyl alcohol derivatives

\[
\text{nico-: nicoboxil (43), nicoclonate (29), nicocodine (12), nicocortonide (40), nicodicodine (15), nicofibrate (31), nicofuranose (14), nicofurate (28), nicomol (23), nicomorphine (7), nicopholine (1), nicorandil (44), nicothiazone (10), nicotinamide (4), nicotinic acid (4), nicotredole (72), nicoxamat (44), nikethamide (4)
\]

inostitol nicotinate (16), xantinol nicotinate (16)

\[
\text{nic-: nicafenine (40), nicainoprol (46), nicametate (15), nicardipine (42), nicanartine (72), nicergoline (26), niceritrol (23), niceverine (15), nictindole (28), nizofenone (44)
}\]

\[
\text{ni-: nialamide (10), niaprazine (24), nifenazone (15), niometacin (33), niprofazone (29), nixylic acid (17)}
\]
INN – The use of stems

-icate: antihypercholesterolaemic and/or vasodilating nicotinic acid esters
H.4.0.0
F.2.2.0
(a) ciclonicate (33), derpanicate (58), estrapronicate (34), glunicate (51), hepronicate (22), micinicate (44), pantenicate (56), sorbinicate (33)
(b) nitrile derivative: nimazone (21)
other: nifunin (24), nimidane (34), nisbuterol (38)
(c) NO₂ - derivatives: acenocoumarol (6) (anticoag.), azathioprine (12) and tiamiprine (15) (antimetabolites), bronopol (14) (antiseptic), chloramphenicol (1) (antibiotic), clonazepam (22) (sed.), flurantel (25) (anthelmintic), flutamide (33) (nonsteroid anti-androgen)

-nidazole (x) antiprotozoals and radiosensitizers, metronidazole derivatives
S.3.3.0 (USAN: antiprotozoal substances (metronidazole type))
Y.0.0.0.0

(a) abunidazole (52), azanidazole (38), bamnidazole (37), benznidazole (31), carrnidazole (32), doranidazole (90), etanidazole (57), fexinidazole (37), flunidazole (21), ipronidazole (21), metronidazole (11), misonidazole (38), moxnidazole (33), ornidazole (28), panidazole (24), pimonidazole (57), pirinidazole (32), propeni dazole (45), ronidazole (18), satranidazole (48), secnidazole (30), sulnidazole (33), ternidazole (34), tinidazole (21), tivanidazole (48)
(b) dimetridazole (17), nimorazole (22), stirimazole (25)

-nidine see -onidine

-nifur- (d) 5-nitrofuran derivatives
S.2.1.0

(a) nifuradene (16), nifuraldehyde (17), nifuralide (34), nifuratol (17), nifuratrine (24), nifurazil (16), nifurethazone (10), nifurfoline (20), nifurimide (18), nifurizone (22), nifurmazole (22), nifurmerone (16), nifuroquine (36), nifuroxazide (14), nifuroxime (11), nifurpipone (20), nifurpinol (22), nifurprazine (16), nifurquinazol (18), nifursemizone (16), nifursol (20), nifurthiazole (14), nifurtimox (21), nifurtoinol (36), nifurvidine (17), nifurzide (37)
(c) furalazine (13), furaltadone (17), furazolidone (13), furazolium chloride (15), furmethoxadone (8), levofuraltadone (17), nidroxyzone (6), nihydrzone (10), nitrofural (1), nitrofurantoin (11), thiofuradene (11)

-nil see -azenil, also for -carnil, -quinil

nitro- or nit- or nit- or ni- or -ni-
nitro-: nitroclofene (41), nitrocycline (14), nitrodan (15), nitrofural (1), nitrofurantoin (11), nitromifene (33), nitroscanate (33), nitrosulfathiazole (1), nitroxinil (19), nitroxoline (15)
nitro: nitrocycline (14), nitroclomethiazole (1), nitrofurazote (1), nitroguanidine (1), nitroguanidine perchlorate (1), nitroguanidine perchlorate (1)
nitr: nitracrine (35), nitrafudam (40), nitramisole (33), nitraquazone (53), nitrazepam (16), nitrafazole (46), nitricholine perchlorate (6)
nit- and -nit-: nitarsone (17), ranitidine (41)

ni-: nibroxane (35), niclofolan (20), niclosamide (13), nidroxyzone (6), nifenalol (22), nihydrzone (10), nimesulide (44), niramazole (22), niridazole (17)
ni-dipine: nicardipine (42), nifedipine (27), niludipine (38), nisoldipine (42), nitrendipine (42), vatamidipine (77)

-nidazole: for INNs of this series see under –nidazole

-nixin anti-inflammatory, anilinonicotinic acid derivatives

USAN

A.4.2.0

(a) butanixin (32), clonixin (22), diclonixin (31), flunixin (31), isonixin (34), metanixin (31)

(c) clonixeril (22), niflumic acid (17), nixylic acid (17)

(-)nonacog see -cog

-octakin see -kin

(-)octocog see -cog
### -ol (d) for alcohols and phenols (deleted from General Principles in 14th Report)

-olol (x) β-adrenoreceptor antagonists

| E.5.2.0 | (BAN: beta-adrenoreceptor antagonists)  
|         | (USAN: beta-blockers (propranolol type)) |

**aromat. ring** \( -\text{O-CH}_2\text{-CHOH-CH}_2\text{-NH-R} \)

(a) acebutolol (28), adalol (63), adimolol (50), afurolol (40), alprenolol (19), ancarolol (47), arnolol (56), arotinolol (48), atenolol (33), befunolol (39), betaxolol (40), bevantoalol (36), bisoprolol (48), bometolol (42), boipindolol (42), bornaprolol (46), bucindolol (43), bucumolol (35), bufetolol (30), bunitrolol (28), bunolol (22), bupranolol (27), butecolol (38), butofilolol (40), carazolol (36), carpindolol (42), carteolol (35), celiprolol (35), cetamedolol (47), ciprololol (48), cipmolol (44), cloranolol (41), crinolol (41) (replaced by pacrinolol (44)), dexnebivolol (98), dexampropranolol (21), diazetolol (41), draquinolol (54), ecastolol (56), epanolol (52), ericolol (50), esatenolol (41), esmolol (50), exaprolol (32), falintolol (53), flestolol (53), flusoxolol (50), idropranolol (31), imidolol (49) (replaced by adimolol (50)), indenalol (37), indopanolol (48), iprocrolol (39), isoaprilol (45), landiolol (75), levbetaxolol (61), levbunolol (42), levomoprolol (58), levonebolol (98), mepidolol (36), metipranolol (38), metoprolol (30), nadolol (34), nadoxolol (28), nafetolol (39), nebulolol (56), dipradolol (50) (previously dipradolol (49)), oxprenolol (20), pacrinolol (44), pafenalol (46), pamatolol (36), paragrolol (36), penbutolol (25), penrilol (36), pindolol (23), pirepulol (48), pracetolol (23), primidotol (42), procinolol (25), propranolol (15), ridazolol (51), ronactolol (57), soquinolol (43), sprenolol (46), talinolol (28), tazolol (31), teiprolol (43), tertatolol (48), tienoxolol (56), tilisolol (57), timolol (29), tiprenolol (23), tolalolol (29), toliprolol (28), trigevolol (56), xibienolol (48), xipralolol (22), zoleprodolol (102)

(b) Q.2.3.0: stanozolol (18) (anabolic steroid)

**-alol aromatic ring** \( -\text{CH-CH}_2\text{-NH-R related to -olols} \)

- **OH**

| (USAN: combined alpha and beta blockers) |

(a) amosulalol (50), bendacalol (59), brefonalol (56), bufuralol (31), dextratolol (74), dilevalol (50), labetalol (35), medroxalol (43), nifenalol (22), pronatalol (14), sotalol (18), sulfinalol (41)

(c) butidrine (16)
-olone  see pred

-onakin  see -kin

-one (d)  ketones

(a)  635 (approx. 7.5 %) INNs ending in -one in Lists 1-105 of proposed INNs

-onide  steroids for topical use, acetal derivatives

Q.3.0.0

(a)  acrocinonide (27), amcinonide (33), budesonide (37), ciclesonide (62), cicortonide (28), ciprocrononide (38), desonide (24), dextraonide (80), droc inonide (29), fluclorolone acetonide (22), flucloronolone acetonide (11), flumoxonide (38), fluocinonide (25), halcinonide (29), itrocinonide (62), nicocortonide (40), procinonide (38), rofleponide (72), tralonide (27), triamcinolone benetonide (36), triamcinolone furetonide (36), triamcinolone hexacetonide (15), triconide (30)

(c)  amcinofal (25), amcinafide (25)

-onidine  antihypertensives, clonidine derivatives

H.3.0.0

(a)  apraclonidine (59) (control of intraocular pressure), benclonidine (42), brimonidine (66), clonidine (40), flutonidine (31), moxonidine (48), piclonidine (44), tolonidine (28)  
related: alinidine (40) (analgesic)  

-nidine  
H.3.0.0

(a)  related antihypertensives: betanidine (13), indanidine (50), rilmenidine (57), tiamenidine (28)  

(b)  muscle relaxant: tizanidine (43)  
topical anti-infective: octenidine (43), pirtenidine (57)  
antibacterial: sulfaguanidine (4)  
vetirinary coccidiostatic: robenidine (25)  

(c)  dexlofexidine (48), levlofexidine (48), lofexidine (33)
INN – The use of stems

-onium  see -ium

-opamine  see -dopa

-orex  anorexics

M.1.0.0  (BAN: anorexic agents, phenethylamine derivatives)
(USAN: anorexiants)

(a)  acridorex (21), amfepentorex (16), aminorex (14), benfluorex (25), clobenzorex (18),
cloflorex (16), clominorex (14), difemetorex (41), etolorex (20), fenisorex (29), fenproporex
(17), flucetorex (30), fludorex (19), fluminorex (14), formetorex (14), furfenorex (16),
indanorex (30), mafenorex (19), morforex (26), oxifentorex (20), pentorex (16), picilorex
(40), tiflorex (34)

(b)  almorexant (98), suvorexant (105)

(c)  bupropion (84) (replaces amfebutamone (31)), amfecloral (12), amfepramone (13),
amfetamine (55), amfetaminil (40), benzphetamine (55), brolamfetamine (55),
chlorphentermine (11), clortermine (22), dexamphetamine (55), dexfenfluramine (54),
dimetamphetamine (38), etilamfetamine (40), fenbutrazate (12), fenfluramine (14),
hexapradol (12), levamfetamine (12), levmetamfetamine (83), levofenfluramine (57),
lisdexamfetamine (94), mephentermine (6), ortetamine (13), phendimetrazine (11),
phenmetrazine (6), phentermine (11)

orphan  opioid receptor antagonists/agonists, morphinan derivates

A.4.1.0  (USAN: -orphan: narcotic antagonists/agonists (morphinan derivatives))

B.2.0.0  (USAN: -orphan: narcotic antagonists/agonists (morphinan derivatives))

(a)  A.4.1.0: butorphanol (31), dextromethorphan (1), dextrorphan (1), dimemorfan (30),
ketorfanol (49), levomethorphan (1), levophenacylmorphan (9), levorphanol (4),
norlevorphan (9), oxilorphan (31), phenomorphan (5), proxorphan (43), racemethorphan
(1), racemorphan (1), xorphanol (48)

B.2.0.0: levallorphan (2)

-orphin-  -orphine: acetorphine (17), alletorphine (25), buprenorphine (29), cyprenorphine (17),
desomorphine (5), diprenorphine (21), etorphine (17), homprenorphine (25),
methyldesorphine (5), methyldihydromorphine (5), morphine glucuronide (92), nalorphine (1), nicomorphine (7), normorphine (7)

-orpholin: hydromorphinol (11)

-orphone: conorfone (46), hydromorphone (1), oxymorphone (5), pentamorphone (60), semorphone (67)

(b) emorfazone (44), morforex (26), morpheridine (6), orphenadrine (8)

-otermin see -ermin

-ox antacids, aluminium derivatives (see also -aldrate)

(a) glucalox (13), sucralox (13)

(b) -dox antibacterials, quinazoline dioxide derivatives:
(USAN: -adox: antibacterials (quinoline dioxide derivatives))

\[
\begin{align*}
\text{carbadox} & \ (19), \ \text{ciadox} \ (44), \ \text{cinoquidox} \ (40), \ \text{drazidox} \ (24), \ \text{mequidox} \ (19), \ \text{olaquindox} \ (31), \ \text{temodox} \ (27) \\
\text{-pirox} \ & \text{antimycotics, pyridone derivatives:} \\
\text{ciclopirox} & \ (26), \ \text{metipirox} \ (26), \ \text{rilopirox} \ (56)
\end{align*}
\]

-xanox antiallergics, tixanox group:
(USAN: antiallergic respiratory tract drugs (xanoxic acid derivatives))

\[
\begin{align*}
\text{amlexanox} & \ (55), \ \text{mepixanox} \ (49), \ \text{sudexanox} \ (44), \ \text{tixanox} \ (37), \ \text{traxanox} \ (44) \\
\text{others:} \ & \text{acipimox} \ (33) \ (antihyperlipidaemic), \ \text{bifeprunox} \ (87) \ (antipsychotic), \ \text{cefminox} \ (53) \ (antibiotic), \ \text{deferasirox} \ (86) \ (chelating agent), \ \text{etofenprox} \ (57) \ (insecticide), \ \text{nifurtimox} \ (21) \ (antiprotozoal), \ \text{pardoprunox} \ (96) \ (antiparkinsonian), \ \text{subenox} \ (37) \ (animal growth regulator), \ \text{xanoxic acid} \ (33) \ (bronchodilator)
\end{align*}
\]
-oxacin (x)  antibacterials, nalidixic acid derivatives

S.5.5.0  (BAN: antibacterial agents of the cinoxacin group)
(USAN: antibacterial (quinolone derivatives))

(a)  cinoxacin (32), droxacin (36), fleroxacin (56), enoxacin (49), garenoxacin (87), irloxacin (53), miloxacin (40), nemonoxacin (96), ozenoxacin (96), rosloxacin (36), tioxacin (34)
-floxacin: alatrofloxacin (75), amifloxacin (51), balofloxacin (71), besifloxacin (98), binfloxac (60), cadifloxacin (81), cetefloxacin (68), ciprofloxac (50), clinafloxac (67), danofloxacin (61), delafloxacin (100), difloxacin (55), ecenofloxacin (78), enrofloxac (56), esafoxic (60), fandofloxacin (78), finafloxacin (85), gatifloxacin (74), gemifloxacin (81), grepafloxacin (68), ibafloxacin (60), levofloxacin (64), levonadifloxacin (95), lomifloxacin (58), marbofloxac (65), merafloxacin (69), moxifloxacin (78), nadifloxacin (64), norfloxac (49), ofloxacin (49), olamufloxacin (79), orbifloxacin (68), pazufloxacin (71), pefloxac (45), pradofloxacin (84), premafloxacin (72), prulifloxacin (72), rufloxacin (57), sarafloxacin (62), sitafloxacin (75), sparifloxac (63), temafloxacin (58), tosufloxac (60), trovafloxacin (73), ulifloxac (89), vebufloxac (69), zabofloxacin (93)
(b)  itarnafloxin (103)
(c)  flumequin (34), nalidixic acid (13), oxolinic acid (15), pipemidic acid (32), piromidic acid (27), metoxate (34)

-oxan(e)  benzodioxane derivatives

E.5.1.0  (USAN: -oxan: α-adrenoreceptor antagonists; benzodioxane derivatives)

(a)  α-adrenoreceptor antagonists: azaloxan (52) (antidepressant), fluparoxan (58) (antidepressant), idazoxan (49) (α₂), imiloxan (52) (α₂) (antidepressant), piperoxan (1) (sympatholytic), proroxan (39)
antihypertensives: flesinoxan (55), guabenxan (32), guanoxan (15)
tranquillizers: butamoxane (12), ethomoxane (12), pentamoxane (12)
muscle relaxant: ambenoxan (21)

oxa, axa, ox: acoxatrine (14) (cardiovascular analeptic), axamozide (53) (neuroleptic), cinepaxadil (50) (coronary vasodilator), dioxadilol (53) (slight β-adrenoreceptor
antagonist), domoxin (14), doxazosin (47), enoxamast (52) (antiallergic), spiroxatrine (14) (analgesic)
related: dexefaroxan (76) (β-adrenoreceptor antagonist), efaroxan (59) (α2)
(b) amoproxan (22), nibroxane (35), razoxane (40), dexrazoxane (62), sobuzoxane (62), tolboxane (12)
(c) aplindore (92), bendacalol (59), binospirone (65), capeserod (94), eltoprazine (57), lecozotan (93), lurtotecan (50), osemozotan (87), quincarbate (31), silibinin (38), sulamserod (82)

-oxanide see -anide
-oxef see cef-
-oxepin see -pine
-oxetine serotonin and/or norepinephrine reuptake inhibitors, fluoxetine derivatives

\[
\begin{align*}
\text{C.3.0.0} \\
\text{(a) atomoxetine (86), ansoxetine (58), dapoxetine (65), duloxetine (68), edivoxetine (104), esreboxetine (99), femoxetine (36), fluoxetine (34), ifoxetine (54), litoxetine (64), nisoxetine (34), omiloxetine (76), paroxetine (38), reboxetine (54), seoproxetine (66)}
\end{align*}
\]

-oxcam see -icam
-oxifene see -fene
-oxopine see -pine

-pafant platelet-activating factor antagonists

\[
\begin{align*}
\text{I.2.1.0} \\
\text{(a) apafant (60), bepafant (60), dacopafant (63), foropafant (75), israpafant (76), lexipafant (70), minopafant (80), modipafant (65), nupafant (70), rocepafant (71), setipafant (72), tulopafant (64)}
\end{align*}
\]
INN – The use of stems

-pamide  
**diuretics, sulfamoylbenzoic acid derivatives**
(coULD be sulfamoylbenzamide) (19th Report, 1970)

N.1.2.0  
(USAN: diuretics (sulfamoylbenzoic acid derivatives))

\[
\begin{align*}
&\text{CO}_2\text{H} \\
&\text{S} \text{NH}_2
\end{align*}
\]

(a) alipamide (18), besulpamide (52), clopamide (13), indapamide (29), tripamide (44), xipamide (22), zidapamide (50) (previously isodapamide (47))

(b) chlorpropamide (8) (hypoglycemic), isopropamide iodide (8) (anticholinergic)

(c) bumetanide (24), chlortalidone (12), clorexolone (15), furosemide (14), sulclamide (15), tiamizide (16)

-pamil  
**calcium channel blockers, verapamil derivatives**

F.2.1.0  
(USAN: coronary vasodilators (verapamil type))

\[
\begin{align*}
&\text{H}_2\text{CO} \\
&\text{H}_2\text{CO} \\
&\text{N} \text{CNH}_3\text{CO} \\
&\text{H}_3\text{CO} \text{H}_3\text{CO} \text{H}_3\text{C} \text{H}_3\text{CO} \text{H}_3\text{CO} \\
&\text{OCH}_3 \\
&\text{OCH}_3
\end{align*}
\]

(a) anipamil (49), dagapamil (52), devapamil (53), dexverapamil (65), emopamil (52), falipamil (48), gallopamil (38), levemopamil (62), nexpomamil (67), ronipamil (51), tiapamil (43), verapamil (16)

related: bertosamil (64), bisaramil (60)

-parcin  
**glycopeptide antibiotics**

S.6.0.0  

(a) avoparcin (29), orientiparcin (72)
-parib  poly-ADP-ribose polymerase inhibitors

iniparib (103), olaparib (94), rucaparib (105), veliparib (102)

-parin  heparin derivatives including low molecular mass heparins

I.2.0.0  (USAN: heparin derivatives and low molecular weight (or depolymerized) heparins)

(a)  adomiparin sodium (104), ardeparin sodium (68), bemiparin sodium (75), certoparin
sodium (70), dalteparin sodium (64), deligoparin sodium (89), enoxaparin sodium (52),
heparin sodium (54), livaraparin calcium (85), minolteparin sodium (73), nadroparin
calcium (65), parnaparin sodium (65), reviparin sodium (65), semuloparin sodium (99),
tafoxiparin sodium (102), tinzaparin sodium (65)

-parinux  synthetic heparinoids

(USAN: antithrombotic indirect selective synthetic factor Xa inhibitors)

(a)  fondaparinux sodium (83) (replaces fondaparinux sodium (79)), idrabiota
parinux sodium (97), idraparinux sodium (84)

-patril/-patrilat  see -tril/-trilat

-pendyl  see -dil

-penem  analogues of penicillanic acid antibiotics modified in the five-membered ring

S.6.0.0  (USAN: antibacterials, antibiotics (carbapenem derivatives))

(a)  biapenem (69), doripenem (83), ertapenem (84), faropenem (69), imipenem (50),
lenapenem (73), meropenem (60), panipenem (64), razupenem (101), ritipenem (67),
sulopenem (68), tacapenem (87), tebipenem pivoxil (82), tomopenem (95)
**perfl(u)-**  
Perfluorinated compounds used as blood substitutes and/or diagnostic agents

(USAN: blood substitutes and/or diagnostics (perfluorochemicals))

(a)  
- perflenapent (78), perflexane (82), perlisisobutane (92), perlisispent (78), perfluamine (45), perflubrodec (87), perflubron (66), perflubutane (91) perflunafene (45), perflutren (82)

- **-peridol**  
See -perone

- **-peridone**  
See -perone

**-perone**  
Tranquilizers, neuroleptics, 4’-fluoro-4-piperidinobutyrophenone derivatives

C.1.0.0  
C.2.0.0  
(USAN: antianxiety agents/neuroleptics; 4’-fluoro-4-piperidinobutyrophenone derivatives)

(a)  
- aceperone (14), amiperone (14), biriperone (51), carperone (24), cicarperone (28), cinuperone (53), cloroperone (38), declenperone (42), duoperone (54), fenaperone (28), fluspiperone (34), lenperone (27), melperone (34), metrenperone (56), milenperone (37), mindoperone (38), moperone (14), nonaperone (44), pipamperone (17), pirenperone (46), prideperone (54), primaperone (17), propyperone (16), roxoperone (17), setoperone (51), spiperone (17), timiperone (40)

closely related: azabuperone (34), azaperone (18), lodiperone (44), zoloperone (39)

**-peridol**  
Antipsychotics, haloperidol derivatives

- benperidol (14), bromperidol (33), [clofluperol (18)], droperidol (14), [fluanisone (13)], haloperidol (10), trifluperidol (16)

**-peridone**  
Antipsychotics, risperidone derivatives

- abaperidone (80), belaperidone (78), cloperidone (17), iloperidone (69), lusaperidone (82), ocaperidone (64), paliperidone (83), risperidone (57), tioperidone (37)

(c)  
domperidone (36), etoperidone (36) (antiemetic)
### -pidem

**USAN**

**hypnotics/sedatives, zolpidem derivatives**

**C.1.0.0**

alpidem (53), necopidem (66), saripidem (67), zolpidem (53)

### -pin(e)

**USAN**

*see also Pharm S/Nom 970 (tricyclic compounds)*

- **-dipine**
  - *see -dipine*
  
  (a) dosulepin (15)

- **-zepine**
  - **antidepressant/neuroleptic: C.3.2.0**
    - dibenzepine (14), elanzepine (35), enprazepine (30), erizepine (54), mezepine (22), nuvenzepine (59), prazepine (15), propizepine (19), tilozonepine (40)
  
  **tricyclic antiulcer: J.0.0.0**
    - darenzepine (52), pirenzepine (30), siltinzepine (63), telenzepine (50), zolenzepine (48)
  
  **tricyclic anticonvulsant: A.3.1.0**
    - carbamazepine (15), eslicarbazepine (91), etazepine (51), licarbazepine (81), oxcarbazepine (41), rispenzepine (63)

- **hyperthermia: amezepine (42)**

- **-apine**
  - **psychoactive: C.0.0.0**
    - amoxapine (25), asenapine (87), batelapine (64), clotiapine (16), clozapine (22), esmirtazapine (93), flumezapine (47), fluperlapine (46), loxapine (22), metiapine (22), mirtazapine (61), olanzipine (67), pentiapine (56), perlapine (23), quetiapine (74), rilpine (52), serazapine (63), tenilapine (52), zicronapine (100)

- **-cilpine**
  - **antiepileptic: A.3.1.0**
    - dizocilpine (60)

- **-oxepin**
  - beloxepin (75), cidoxepin (17), doxepin (15), maroxepin (54), metoxepin (33), pinoxepin (18), savoxepin (56), spiroxepin (32)

- **-oxopine**
  - traboxopine (58)

- **-sopine**
  - adosopine (63)

- **-tepine**
  - citatepine (54), clorotepine (29), damotepine (27), metitapepine (27), tropatepine (28)

(b) atromepine (15), noscapine (7), prozapine (14)

(c) clobenzepam (25), homopiprolam (20), opipramol (15)

### -piprazole

**see -prazole**

### -pirone

**see -spirone**
-pirox see -ox/-alox

-pitant see -tant

-plact platelet factor 4 analogues and derivatives

iroplact (74)

-pladib phospholipase A₂ inhibitors

W.0.0.0
darapladib (94), ecopladib (90), efipladib (92), giripladib (96), goxalapladib (94), rilapladib (94), varespladib (87)

-planin antibacterials (Actinoplanes strains)

S.5.0.0
actaplanin (34), mideplanin (66), ramoplanin (57), teicoplanin (48)

-plase see -teplase, -uplase under -ase

-plasmid see -gene for gene therapy products

-platin (x) antineoplastic agents, platinum derivatives

L.0.0.0 (USAN: antineoplastics (platinum derivatives))

(a) carboplatin (48), cisplatin (39), dexamaplatin (64), enloplatin (64), eptaplatin (83), iproplatin (51), lobaplatin (65), miboplatin (66), miriplatin (85), nedaplatin (67), ormaplatin (63), oxaliplatin (56), picoplatin (87), satraplatin (80), sebriplatin (68), sipoiplatin (48), triplatin tetranitrate (87), zeniplatin (63)

-plermin see -ermin

-plestim see -stim and -kin
### -plon

**USAN**

Imidazopyrimidine or pyrazolopyrimidine derivatives, used as anxiolytics, sedatives, hypnotics

A.2.2.0

(USAN: non-benzodiazepine anxiolytics, sedatives, hypnotics)

C.1.0.0

Adipiplon (98), divaplon (61), fasiplon (61), indiplon (86), lorediplon (105), ocinaplon (72), panadiplon (65), taniplon (61), zaleplon (72)

### -poetin (x)

**BAN, USAN**

Erythropoietin type blood factors

I.3.0.0

(USAN: erythropoietins)

(a) Darbepoetin alfa (85), epoetin alfa (62), epoetin beta (62), epoetin delta (85), epoetin gamma (67), epoetin epsilon (72), epoetin kappa (97), epoetin omega (73), epoetin theta (95), epoetin zeta (92)

### -porfin

**USAN**

Benzoporphyrin derivatives

(a) Exeporfinium chloride (105), lemutesporfin (91), padeliporfin (96), padoporfin (93), rostaporfin (83), stannsoporfin (79), talaporfin (84), temoporfin (70), verteporfin (71)

### -poride

**BAN, USAN**

Na⁺/H⁺ antiport inhibitor

Amiloride (18), cariporide (74), eniporide (79), rimeporide (92), sabiporide (84), zoniporide (85)

### -pramine

**BAN, USAN**

Substances of the imipramine group

C.3.2.0

(USAN: antidepressants (imipramine type))

\[
\begin{align*}
\text{N} & \text{N} \\
& \text{CH}_3 \\
\text{CH}_3 & \text{N} \\
& \text{CH}_3 \\
\end{align*}
\]

(a) Saturated dibenzazepine:
Azipramine (36), caripramine (16), cianopramine (47), ciclopramine (29), cloacapramine (28), clomipramine (17), depramine (31), desipramine (13), imipramine (8), ketimipramine (17), lofepramine (24), lopramine (24) (replaced by lofepramine (34)), metapramine (34), mosapramine (64), quinupramine (32), tampramine (54), tienopramine (38), trimipramine (13), imipraminoxide (36)

(c) Unsaturated dibenzazepine:
Carbamazepine (15), homopipramol (20), opipramol (15)
-prazole  antiulcer, benzimidazole derivatives

J.0.0.0  (USAN: antiulcer agents (benzimidazole derivatives))

(a)  cinprazole (34), dexlansoprazole (93), disuprazole (56), esaprazole (45), esomeprazole (79), fuprazole (39), ilaprazole (86), lansoprazole (60), leminoprazole (68), levolansoprazole (93), nepaprazole (74), nilprazole (37), omeprazole (46), pantoprazole (62), picoprazole (46), pumaprazole (76), rabeprazole (69), saviprazole (62), tenatoprazole (80), timoprazole (35), ufiprazole (58)

-piprazole  psychotropics, phenylpiperazine derivatives (Future use is discouraged due to conflict with the stem -prazole)

C.0.0.0

(a)  aripiprazole (75), dapiprazole (45), elopiprazole (70), enpiprazole (24), lorpiprazole (60), mepiprazole (24), sonepiprazole (80), tolpiprazole (25)

pred  prednisone and prednisolone derivatives

Q.3.3.0  (USAN: pred-; -pred- or -pred: prednisone and prednisolone derivatives)

(a)  chloroprednisone (12), cloprednol (31), diffprednate (21), domoprednate (47), etiprednol dicloacetate (88), fluprednidene (19), fluprednisolone (13), halopredone (36), isoflupredone (36), isoprednide (24), loteprednol (64), mazipredone (32), meprednisone (15), methylprednisolone (8), methylprednisolone aceponate (52), methylprednisolone sulpetanate (56), oxisopred (29), prednazarate (16), prednazolone (22), prednicarbate (44), prednimustine (31), prednisolamate (13), prednisolone (6), prednisolone steaglate (16), prednisone (6), prednylidene (13), tipredane (54)

(b)  various non-steroidal compounds
  citiolone (23) (hepatobil. troubles), clorexolone (15) (diuretic), fenozoilone (14) (psychotonic), tioxolone (16) (keratolytic), vistatolon (25) (antiviral)
(c) **-betasol**: clobetasol (26), doxibetasol (26), ulobetasol (54)

(c) **-methasone or -metasone**: alclometasone (41), amelometasone (74), beclometasone (17), betamethasone (11), betamethasone acibutate (26), cornetasone (29), desoximetasone (20), dexamethasone (8), dexamethasone acefurate (57), dexamethasone cipecilate (94), flumetasone (13), halometasone (41), icometasone enbutate (70), mometasone (56), paramethasone (12)

(c) **-olone**: steroids not used as glucocorticosteroids
(USAN: steroids (not prednisolone derivatives))
bardoxolone (101), clocortolone (16), descinolone (17), diflucortolone (18), flucorolone acetonide (22), fluocinolone acetonide (11), fluocortolone (15), fluorometholone (8), fluperolone (13), halocortolone (31), rimexolone (38), triamcinolone (8), triamcinolone benetonide (36), triamcinolone furetonide (36), triamcinolone hexacetonide (15)

(c) clobetasone (26), cloticasone (52), deprodone (20), dichlorisone (10), diflorasone (30), flunisolide (11), fluticasone (52), fluticasone furoate (96), meclorisone (40), timobesone (51)

**-olone**

A.1.2.0 general anesthetics, pregnanes: alfadolone (27), alfaxalone (27), eltanolone (65), ganaxolone (76), minaxolone (39), renanolone (8)

H.2.0.0 antiarrhythmic: amafolone (40), edifolone (56)

H.4.0.0 antihyperlipidaemic: colestolone (59)

J.0.0.0 glycyrhetic acid derivatives: carbenoxolone (15), cicloxolone (33), cinoxolone (33), deloxolone (51), enoxolone (15), roxolonium metilsulfate (33)

L.6.0.0 cytostatics - sex hormones: drostanolone (13), trestolone (25)

Q.2.3.0 androgens: androstanelone (4), drostanolone (13), mestanolone (10), metenolone (12), nandrolone (22), norethandrolone (6), oxandrolone (12), oxymetholone (11)

Q.2.3.1 oxendolone (42), mesterolone (15), rosterolone (59)

M.4.1.0 bolone (see bol, anabolic steroids): formebolone (31), mesabolone (29), metribolone (17), oxabolone cipionate (14), quinbolone (14), roxibolone (40), stenbolone (17), tibolone (22), trenbolone (24)

-renaline see -terol
**INN – The use of stems**

**-pressin**

*vasoconstrictors, vasopressin derivatives*

**USAN**

**Q.1.2.0**

\[ \text{H-} \text{Cys-} \text{Tyr-} \text{Phe-} \text{Gln-} \text{Asn-} \text{Cys-} \text{Pro-} \text{Arg-} \text{Gly-} \text{NH}_2 \]

(a) argipressin (13), desmopressin (33), felypressin (13), lypressin (13), ornipressin (22), selepressin (105), terlipressin (46), vasopressin injection (16)

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**-previr**

see vir

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**-pride**

*sulpiride derivatives*

**BAN; USAN**

**C.0.0.0**

**J.1.0.0**

(a) C.0.0.0: alizapride (43), alpiropride (49), amisulpride (44), batanopride (61), broclepride (43), cisapride (49), dazopride (50), denipride (58), etacepride (52), eticlopride (52), flubepride (35), nemonapride (63) (previously emonapride (61)), peralopride (43), prosulpride (43), prucalopride (78), sulmepride (43), sultopride (26), sulverapride (44), veralipride (43)

J.1.0.0: alepride (40), bromopride (27), cinitapride (41), cipropride (41), clebopride (32), dobutapride (57), irolapride (55), isosulpride (36), itopride (66), lintopride (65), lirexapride (74), lorapride (44), mezacopride (56), mosapride (66), naronapride (104), pancopride (62), raclopride (52), remoxipride (49), renzapride (60), tiapride (28), ticalopride (83), tinisulpride (44), trazolopride (51), tropapride (48), zacopride (55)

K.0.0.0: cloxacepride (42)

U.1.1.0/C.0.0.0: ioilopride (123I) (73)

(b) glimepride (66)

(c) C.0.0.0: levosulpiride (63), sulpiride (18)

J.1.0.0: metoclopramide (17)

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**-pril (x)**

*angiotensin-converting enzyme inhibitors*

**BAN, USAN**

**H.3.0.0**

(BAN: inhibitors of angiotensin-converting enzyme)

(USAN: antihypertensive agents (ACE inhibitors))

(a) alacepril (50), benazepril (58), captopril (39), ceronapril (64), cilazapril (53), delapril (54), enalapril (46), fosinopril (56), idrapril (66), imidapril (60), indolapril (50), libenzapril (58),
lisinopril (50), moexipril (60), moveltipril (58), orbutopril (57), pentopril (53), perindopril (53), pivopril (52), quinapril (54), ramipril (52), renitapril (55), spirapril (56), temocapril (64), trandolapril (53), utibapril (63), zabicipril (58), zofenopril (51)

-prilat (x)  
(USAN: antihypertensives (ACE inhibitors) (diacid analogs of the -pril entity))

(a) benazeprilat (58), cilazaprilat (54), enalaprilat (50), fosinoprilat (62), imidaprilat (71), moexiprilat (67), perindoprilat (56), quinaprilat (60), ramiprilat (53), spiraprilat (60), temocaprilat (78), trandolaprilat (60), utibaprilat (65), zabiciprilat (64), zofenoprilat (63)

-prim antibacterials, trimethoprim derivatives
S.5.5.0

(a) aditoprim (49), baquiloprim (56), brodimoprim (44), epiroprim (44), iclaprim (88), metioprim (42), ormetoprim (21), talmetoprim (41), tetroxoprim (33), trimethoprim (11), vaneprim (48)
(c) diaveridine (18)

-pris- steroidal compounds acting on progesterone receptors (excluding -gest- compounds)
Q.2.0.0 (USAN: -prisnil: selective progesterone receptor modulators (SPRM); -pristine: progesterone receptor antagonists)

(a) aglepristone (70), asoprisnil (88), asoprisnil ecamate (89), lilopristone (54), lonaprisan (97), mifepristone (54), onapristone (58), telapristone (103), toripristone (61), ulipristal (96)
(c) epristeride (69), saprisartan (72), and the stem -pristin selected for antibacterials, pristinamycin derivatives

-pristin antibacterials, pristinamycin derivatives
S.6.0.0

(a) dalfopristin (67), efepristin (75), flopristin (98), quinupristin (65), linopristin (98), volpristin (80)
**-profen (x) anti-inflammatory agents, ibuprofen derivatives**

A.4.2.0 (USAN: anti-inflammatory/analgesic agents (ibuprofen type))

![Chemical structure of ibuprofen]

(a) alminoprofen (40), araprofen (65), atliprofen (74), bakeprofen (61), benoxaprofen (34), bermoprofen (57), bifeprofen (57), carprofen (35), cicloprofen (32), clirofen (32), dexibuprofen (61), dexindoprofen (49), dexketoprofen (70), esflurbiprofen (56), fenoprofen (26), flunoxaprofen (44), fluprofen (18), flurbiprofen (28), frabuprofen (51), furaprofen (42), furcloprofen (44), hexaprofen (30), ibuprofen (16), indoprofen (32), isoprofen (40), ketoprofen (28), lobuprofen (53), lonaprofen (44), losmiprofen (61), loxoprofen (50), mabuprofen (64), mexaprofen (33), miroprofen (44), odalprofen (66), pelubiprofen (76), piketoprofen (40), pirprofen (32), pranoprofen (38), suprofen (31), tazeprofen (50), tetriprofen (29), tilnoprofen arbamel (74), tioxaprofen (39), vedaprofen (72), ximoprofen (37), zaltoprofen (64), zoliprofen (55)

(b) aprofene (12) (antispasm. coron. vasodil.), diprofene (12) (antispasm. blood vessels)

(c) brofezil (31), protizinic acid (27), tiaprofenic acid (30)

**prost (x) prostaglandins**

Q.0.0.0 (USAN: -prost- or -prost: prostaglandins)

(a) alfaprostol (45), alprostadil (39), ataprost (62), beraprost (59), bimatoprost (85), butaprost (55), carboprost (36), cicaprost (54), ciprostene (51), clinprost (68), cloprostenol (33), cobiprostone (98), delprostenate (42), dimoxaprost (52), dinoprost (26), dinoprostone (26), doxaprost (34), ecraprost (83), eganoprost (84), enisoprost (50), epoprostenol (44), epotaloprost (56), etiprost (46), fenprostale (42), flunoprost (53), fluprostenol (33), froxiprost (55), gencaprost (42), iloprost (48) (originally ciloprost (46)), lanproston (72), latanoprost (67), limaprost (56), lubiprost (89), luprostil (44), meteneprost (45), misoprostol (47), naxaprostene (58), nileprost (45), nocloprost (51), oxaprostol (44), penprostene (37), pinilprost (71), piriprost (51), posaraprost (97), prostalone (34), remiprostil (65), rivenprost (93), rosaprostol (48), sulprostone (37), taprostene (58), taiprost (41), tafluprost (89), tilsuprost (51), tiprostanide (48), travoprost (80), treprostinil (87), unoprostone (66), vapiprost (58), viprostil (53)

**-prostil prostaglandins, anti-ulcer**

(a) arubaprostil (35), deprostil (32), enprostil (50), mexiprostil (52), ornoprostil (56), rioprostil (49), spiriprostil (63), trimprostil (49)
-quidar  drugs used in multidrug resistance; quinoline derivatives
L.0.0.0  (USAN: multidrug resistance inhibitors (quinoline derivatives))
dofequidar (88), laniquidar (85), tariquidar (86), zosuquidar (86)

-quine (d)  quinoline derivatives (deleted from General Principles in List 28 prop. INN)

(a)  antimalarial: amodiaquine (1), amopyroquine (8), bulaquine (82), chloroquine (4),
ferroquine (95), hydroxychloroquine (8), mefloquine (33), moxipraquine (26), pamaquine
(4), pentaquine (4), primaquine (1), quinocide (34), tafenoquine (80), tebuquine (49)
acequinoline (22), actinoquinol (15), aminquinol (22), amquinate (21), amiquinsin
(17), aminoquinutride (45), benzoxiquine (18), broquinaldol (17), buquinaran (40),
buquinolate (16), clamoxyquine (16), cletoquine (20), chlorquinaldol (1), cinoquidox
(40), ciproquinate (22), cloquinol (16), cloquinate (11), cloxiquine (30), debrisoquine
(15), decoquinate (20), diiodhydroxyquinoline (1), esproquine (31), flumequine (34),
guanisouquinol (15), hedaquinium chloride (8), intiquinatine (99), iquindamine (34),
isotiquimide (49), leniquinsin (18), mebiquest (29), nequinate (22), nifuroquine (36),
olaquindox (31), oxamniqion (28), peraquinsin (29), pirquinozol (43), proquinolate
(17), quinaldine blue (17), quincarbate (31), quindecamine (15), quindoxin (26),
quinetate (16), quinfamide (40), quinsocaine (4), quinprenaline (17), quinuclium
bromide (40), quipazine (17), sitamaquine (80), tilbroquinol (45), tiliquinol (45),
tiquenamide (35), tiquizium bromide (47), toquazine (17), tretoquinol (21), viquidil (25)

(b)  broxaldine (12), cinchocaine (1), cinchophen (I), climiquinalse (33), dehydroemetine (15),
dequalinium chloride (8), dimethyltubocurarinium chloride (1), dimoxine (1),
drotaverine (17), ethaverine (4), euprocin (22), famotine (23), flucarbril (14),
glaftenine (15), laudexium metilsulfate (4), laurolinium acetate (12), memotine (22), metofoline (12),
neocinchophen (I), niceverine (15), nitrozone (15), noscapine (7), octaverine (18),
oxolinic acid (15), oxycinophen (6), pyrvinium chloride (6), trethinimum tosilate (14),
tritoqualine (14), tubocurarine chloride (1)

-quinil  see -azenil
**racetam**  amide type nootrope agents, piracetam derivatives

\[ \text{BAN: substances of the piracetam group} \]
\[ \text{USAN: nootropes (piracetam type)} \]

B.1.0.0  

\[ \text{aloracetam (62), aniracetam (44), brivaracetam (93), cebaracetam (66), coluracetam (86), dimiracetam (68), doliracetam (53), dupracetam (38), etiracetam (40), fasoracetam (79), fonturacetam (104), imuracetam (42), levetiracetam (62), molracetam (55), nebracetam (62), nefiracetam (64), nicoracetam (63), oxiracetam (43), piracetam (22), pramiracetam (46), rolziracetam (54), seletracetam (93) related: tenilsetam (51)} \]

**racil**  uracil type antineoplastics

\[ \text{L.0.0.0} \]

\[ \text{eniluracil (77), fluorouracil (13), gimeracil (80), oteracil (80)} \]

**thiouracil**  uracil derivatives used as thyroid antagonists

\[ \text{M.7.3.0 (USAN: -uracil: uracil derivatives used as thyroid antagonists and as antineoplastics)} \]

\[ \text{iiodothiouracil (01), methylthiouracil (01), propylthiouracil (01)} \]

**relin (x)**  pituitary hormone-release stimulating peptides

\[ \text{Q.0.0.0 (BAN: hypophyseal hormone release-stimulating peptides)} \]
\[ \text{USAN: prehormones or hormone-release stimulating peptides)} \]

\[ \text{LHRH-release-stimulating peptides: avorelin (74), buserelin (36), deslorelin (61), gonadorelin (32), goserelin (55), histrelin (53), leuprorelin (47), lutrelin (51), nafarelin (50), peforelin (93), triptorelin (56)} \]
### INN – The use of stems

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<tr>
<th>Stem</th>
<th>Description</th>
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<tr>
<td><strong>-morelin</strong></td>
<td>Growth hormone release-stimulating peptides:</td>
</tr>
<tr>
<td>(a)</td>
<td>anamorelin (97), capromorelin (83), dumorelin (59), examorelin (72), ipamorelin (78), lenomorelin (105), macimorelin (100), pralmorelin (77), rismorelin (74), sermorelin (56), tabimorelin (80), tesamorelin (96), ulimorelin (103)</td>
</tr>
<tr>
<td>(c)</td>
<td>somatoren (57)</td>
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<tr>
<th><strong>-tirelin</strong></th>
<th>Thyrotropin releasing hormone analogues:</th>
<th>USAN</th>
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<tbody>
<tr>
<td>(a)</td>
<td>azetirelin (60), fertirelin (42), montirelin (58), orotirelin (58), posatirelin (60), protirelin (31), ravatirelin (104), taltirelin (75)</td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td>corticoren (64) (diagnostic agent)</td>
<td></td>
</tr>
<tr>
<td>(c)</td>
<td>thyrotropin alfa (78) (thyrotropin releasing hormone (TRH) analog)</td>
<td></td>
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<tr>
<th><strong>-relix</strong></th>
<th>Pituitary hormone-release inhibiting peptides</th>
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<tbody>
<tr>
<td>(a)</td>
<td>abarelix (78), cetrorelix (66), degarelix (86), detirelix (56), ganirelix (65), iturelix (79), ozarelix (94), prazarelix (81), ramorelix (69), teverelix (78)</td>
</tr>
</tbody>
</table>

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<tr>
<th><strong>-renone</strong></th>
<th>Aldosterone antagonists, spironolactone derivatives</th>
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<tbody>
<tr>
<td>N.1.8.0</td>
<td>(USAN: aldosterone antagonists (spironolactone type))</td>
</tr>
<tr>
<td>(a)</td>
<td>canrenoic acid (20) and potassium canrenoate (20), canrenone (20), dicirenone (50), drospirenone (63), eplerenone (77), mespirenone (51), spirorenone (45)</td>
</tr>
<tr>
<td>(b)</td>
<td>bromchlorenone (12) (antifungal), menatetrenone (28) (antihemorrhagic), teprenone (50), ubidecarenone (48) (in congestive heart failure)</td>
</tr>
<tr>
<td>(c)</td>
<td>oxprenoate potassium (53), prrenoate potassium (32), spironolactone (11), spiroxasone (14)</td>
</tr>
</tbody>
</table>

| **-restat** | See -stat |
**INN – The use of stems**

### retin

**retinol derivatives**

P.1.0.0  
(USAN: -retin- or -retin: retinol derivatives)

- acitretin (56) (previously etretin (51)), alitretinoin (80), doretinoid (60), etretinate (41), fenretinide (51), isotretinoin (41), motretinide (38), pelretin (60), peretinoin (98), retinol (18), tretinoin (25), tretinoin tocoferil (66)

- noretynodrel (13), secretin (1), trethiniun tosilate (14)

### -ribine

**ribofuranyl-derivatives of the "pyrazofurin" type**

L.0.0.0/  
S.5.3.0

- azaribine (19), cladribine (68), isatoribine (83), loxoribine (64), mizoribine (46), triciribine (46)

- pirazofurin (31), ribavirin (31), riboprime (20), tiazofurine (48)

  related: benaxibine (50)

### rifa-

**antibiotics, rifamycin derivatives**

S.6.4.0

- rifabutin (52), rifalazil (78), rifametane (61), rifamexil (67), rifamide (15), rifampicin (17), rifamycin (13), rifapentine (43), rifaximin (49) (previously rifaxidine (48))
-rinone cardiac stimulants, amrinone derivatives

H.1.0.0 (USAN: cardiotonics (amrinone type))

(a) amrinone (38), bemarinone (57), medorinone (54), milrinone (50), nanterinone (60), olprinone (70), pelrinone (53), saterinone (56), toborinone (72), vesnarinone (57)

(b) gestrinone (39), indacrinone (51), taziprinone (48)

-rizine see -izine

-rolimus see -imus

-rozole aromatase inhibitors, imidazole-triazole derivatives

L.0.0.0

anastrozole (72), fadrozole (64), finroazole (81), letrozole (70), liarozone (64), talarozole (99), vorozole (64)

(b) aminitroazole (4), sulfatiroazole (24), tenonitroazole (47)

-rsen antisense oligonucleotides

aganirsen (101), alicaforsen (85), anivamersen (105), aprinocarsen (89), beclanorsen (01), cenersen (97), custirsen (99), gataparsen (103), eteplirsen (103), mipomersen (99), oblimersen (87), trabedersen (97)

-virsen (antivirals): afovirsen (71), fomivirsen (75), miravirsen (101), trecovirsen (77)
**INN – The use of stems**

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**-rubricin**  
antineoplastics, daunorubicin derivatives

L.5.0.0  
(USAN: antineoplastic antibiotics (daunorubicin type))

![Chemical structure](image)

(a) aclarubicin (44), amrubicin (65), berubicin (98), carubicin (40), daunorubicin (20), detorubicin (41), doxorubicin (25), epirubicin (48) (originally pidorubicin (47)), esorubicin (47), galarubicin (80), idarubicin (47), ladirubicin (83), leurubicin (64), medorubicin (47), nemorubicin (71), pirarubicin (55), rodoarubicin (54), salarubicin (90), valrubucin (79), zorubicin (39)

---

**sal**  
salicylic acid derivatives

(USAN: -sal-; -sal; or sal-: anti-inflammatory agents (salicylic acid derivatives))

![Chemical structure](image)

(a) **sal-** analgesic anti-inflammatory A.4.2.0

choline salicylate (15), imidazole salicylate (51), salacetamide (1), salcolex (23), saletamide (20), salfluverine (29), salicylamide (1), salnacedin (73), salprotoside (31), salsalate (28), salverine (15)

various
salafibrate (41) (antihyperlipidaemic), salantel (29) (anthelmintic), salcaproxic acid (88) (absorption promotor), salclobuzic acid (92) (pharmaceutical aid), salinazid (8) (antituberculous agent), salirasib (97) (antineoplastic)

**-sal** analgesic anti-inflammatory A.4.2.0

detanosal (23), diflunisal (33), fendosal (35), flufenisal (22), fosfosal (37), guacetisal (40), guaimosal (50), parcesal (65), pranosal (24), sulprosal (36), tenosal (63)

antithrombotic
flufosal (42)

various: antituberc.
fenamisal (15), thiomersal (1) (disinfect.), triflusal (37) (antithrombotic)

**-sal-** analgesic anti-inflammatory A.4.2.0

acetaminosalol (1), carbasalate calcium (27), carsalam (13), etersalate (50), etosalamide (14), isalmadol (92), parsalmide (32), talosalate (43)
various amotosalen (85), calcium benzamidosalicylate (10), homosalate (28) (sunscreen agent), isalsteine (63) (mucolytic), lasalocid (30) (antibiotic (veterinary)), mersalyl (4) (mercurial diuretic), octisalate (83) (sunscreen), osalmid (15) (choleretic), susalimod (73) (immunomodulator), xenysalate (12) (antiseborrheic)

**salazo-** phenylazosalicylic acid derivatives antibacterial S.5.1.0 salazodine (22), salazosulfadimidine (11), salazosulfamide (1), salazosulfathiazole (1)

**-salazine/-salazide**
dersalazine (86), mesalazine (52), olsalazine (52), sulfasalazine (55), balsalazide (48), ipsalazide (48)

**-salan** brominated salicylamide derivatives disinfectant S.2.1.0 bensalan (18), dibromsalan (14), flusalan (16), fursalan (18), metabromsalan (16), tiosalan (18), tribromsalan (14)

(b) non-salicylic acid derivatives fosaludine tidoxil (95), macrosalb (99mTc) (33), rusalatide (96), trioxysalen (16) (pigmenting agent)

**bronchodilators** levosalbutamol (78), salbutamol (20), salmefamol (23)

(c) analgesic, anti-inflammatory A.4.2.0 aloxiprin (13), anilamate (13), benorilate (21), brosotamide (29), cresotamide (28), dibusadol (24), dipyrocetyl (6), ethenzamide (10), fenamisfuril (16), gentisic acid (01), hydroxytoluic acid (17), sodium gentisate (1), sodium glucaspaldrate (17)

various
**4-aminosalicylates of the -caine series D.1.0.0:** ambucaine (6), hydroxyprocaine (1), hydroxytetracaine (1), propoxycaine (4)

**antihypertensives H.3.0.0:** labetalol (35)

**antitusssives K.1.0.0:** alloclamide (16), flualamide (20)

**saluretics N.1.2.0:** xipamide (22) (sulfamoyl derivative),

**mercurial diuretics N.1.3.0:** mercuderamide (1)

**anthelmintics S.3.1.0:** bromoxanide (31), clioxanide (19), niclosamide (13), rafoxanide (24), closantel (36), flurantel (25), resorantel (23)

**antifungals S.4.0.0:** buclosamide (16), exalamide (37), pentalamide (13)

See also Pharm S/Nom 557
**-sartan (x)**angiotensin II receptor antagonists, antihypertensive (non-peptidic)

H.3.0.0

(USAN: -sartan: angiotensin II receptor antagonists)

abitesartan (73), azilsartan (95), azilsartan medoxomil (97), candesartan (71), elisartan (72), embusartan (78), eprosartan (71), fimasartan (94), forasartan (74), irbesartan (71), losartan (66), milfarsartan (76), olmesartan (93), olmesartan medoxomil (86), pomisartan (73), pratosartan (85), ripisartan (73), saprisartan (72), tasosartan (72), telmisartan (70), valsartan (68), zolasartan (70)

**-semide** diuretics, furosemide derivatives

N.1.1.0

(a) azosemide (35), furosemide (14), galosemide (33), sulosemide (49), torasemide (35)

**-sermin** see -ermin

**-serod** serotonin receptor antagonists and partial agonists

J.0.0.0

(a) capeserod (94), piboserod (79), sulamserod (82), tegaserod (79)

**-serpine (d)** derivatives of *Rauwolfia* alkaloids

E.5.4.0

(a) bietaserpine (14), mefeserpine (15), reserpine (4)

(c) chloroserpidine (11), deserpidine (6), methoserpidine (11), metoserpate (20), rescimetol (44), rescinnamine (6), syrosingopine (10)

**-sertib** serine/threonine kinase inhibitors

L.0.0.0

alisertib (104), barasertib (102), cenisertib (104), danusertib (99), delcasertib (105), pimasertib (105), silmitasertib (103), tozasertib (100), volasertib (102)
**serotonin receptor antagonists (5-HT₃)** not fitting into other established groups of serotonin receptor antagonists

(BAN: serotonin receptor antagonists (5HT₃) used as antihypertensives)
(USAN: serotonin 5-HT₃ antagonists)

(a) alosetron (66), azasetron (68), bemesetron (64), cilansetron (68), dolasetron (65), fabesetron (74), galdansetron (72), granisetron (59), indisetron (76), itasetron (68), lerisetron (69), lurosetron (69), mirisetron (72), ondansetron (59), palonosetron (74), ramosetron (70), ricasetron (70), tropisetron (62), zatosetron (64)

**growth hormone derivatives**

Q.0.0.0

(USAN: growth hormone derivatives)
(USAN: som- -bove: bovine somatotropin derivatives)
(USAN: som- -por: porcine somatotropin derivatives)

(a) -bove: bovine type substances: somagrebove (63), somavubove (63), sometribove (74), somidobove (58)
-por: porcine-type substances: somalapor (62), somenopor (62), somfasepor (66), sometripor (55)
-salm: salmon-type substances: somatosalm (69)
Others: somatrem (54), somatropin (56), somatropin pegol (103)

(b) somatorelin (57), somantadine (51), somatostatin (46)

**see -pine**

**anxiolytics, buspirone derivatives**

C.1.0.0

(a) alnespirone (70), binospirone (65), buspirone (30), enilospirone (52), perospirone (71), revospirone (61), tandospirone (60), tiospirone (57), umespirone (60), zalospirone (64)

(c) eptapirone (82), gepirone (54), ipsapirone (54)
-stat or -stat
- castat  enzyme inhibitors
  (a) dopamine β-hydroxylase inhibitors
e tamicastat (101), nepicastat (78)

-elestat  elastase inhibitors
  (a) alvelestat (104), depelestat (91), freselestat (89), sivelestat (78), tiprelestat (103)

-inostat  histone deacetylase inhibitors
  (a) abexinostat (105), belinostat (97), dacinostat (89), entinostat (99), givinostat (101),
mocetinostat (101), panobinostat (96), pracinostat (104), resminostat (102), tefinostat (105),
vorinostat (94)

-listat  gastrointestinal lipase inhibitors
  (a) cetilistat (91), orlistat (66)

-mastat  matrix metalloproteinase inhibitors
  (a) batimastat (70), cipemastat (81), ilomastat (73), marimastat (75), pronomastat (82),
rebimastat (89), solimastat (80), tanomastat (82)

-mostat  proteolytic enzyme inhibitors:
  (a) camostat (46), nafamostat (53), patamostat (69), sepimostat (68), upamostat (105)
  (c) aloxistatin (57), ulinastatin (56)

-restat or -restat
- M.5.0.0
  (a) alrestatin (37), epalrestat (55), fidarestat (78), imirestat (59), lidorestat (87), minalrestat
  (76), ponalrestat (58), ranirestat (91), risarestat (82), tolr estat (51), zenarestat (64),
zopolrestat (64)

various:  afegostat (101)  β-glucocerebrosidase inhibitor
  apratastat (93): inhibition of TNF-α converting enzyme
  avagacestat (104): gamma secretase inhibitor
  azalanstat (73): lanosterol 14α-demethylase inhibitor
  begacestat (97)  gamma secretase inhibitor
  benurestat (31): urease inhibitor
  cilastatin (50): renal dehydropeptidase inhibitor
  cobicistat (103)  cytochrome P450 3A4 (CYP3A4) inhibitor
  conestat alfa (98) human plasma protease C1 inhibitor
  duvoglustat (102) Pompe's disease therapy
  eliglustat (103) glucosylceramide synthase inhibitor
ezatiostat (98) glutathione-S-transferase inhibitor
efebuxostat (85): xanthine oxidase and xanthine dehydrogenase inhibitor
imetelstat (101) antineoplastic, telomerase inhibitor
iofolastat (123I) (105) radiopharmaceutical
irosustat (104) antineoplastic
lapaquistat (96) squalene synthase inhibitor
migalastat (95): alpha-galactosidase A enzyme inhibitor
miglustat (85): glucosyltransferase inhibitor
niraxostat (99): xanthine oxidase inhibitor
nystatin (6): antifungal antibiotic
pentostatin (38): vidarabin activity potentiator; inhibitor of enzymatic deaminative metabolism
pepstatin (28): pepsin inhibitor
semgacestat (99): gamma secretase inhibitor
somatostatin (43): growth hormone release inhibiting factor
talobastat (92): antineoplastic
telotristat (104) tryptophan hydroxylase inhibitor
tendamistat (44): amylase inhibitor
topiroxostat (102) xanthine oxidase and xanthine dehydrogenase inhibitor
tosedostat (99) antineoplastic, aminopeptidase inhibitor
vistatolon (25): antiviral antibiotic
zinstatin (40): antineoplastic
zinstatin stimalamer (74)

-vastatin antihyperlipidaemic substances, HMG CoA reductase inhibitors

H.4.0.0

(a) atorvastatin (71), bervastatin (72), cerivastatin (74), crilvastatin (63), dalvastatin (64),
fluvastatin (62), glenvastatin (70), lovastatin (57), mevastatin (44), pitavastatin (86)
(replaces itavastatin (80)), pravastatin (57), rosuvastatin (94), simvastatin (58), tenivastatin
(85)

-steine mucolytics, other than bromhexine derivatives

K.0.0.0 (BAN: substances of the acetylcysteine group)

(a) acetylcysteine (13), bencisteine (30), carbocisteine (34), cartasteine (72), dacisteine (49),
danostine (53), erdostine (56), fidostine (77), guaisteine (57), isalisteine (63), letostine
(38), mecysteine (13), midasteine (63), moguiisteine (61), nesosteine (52), omonasteine
(40), prenisteine (42), salmisteine (58), taurosteine (63), telmesteine (63)

-ster- androgens/anabolic steroids

Q.2.3.1

(a) -testosterone: cloxotestosterone (12), methyltestosterone (4), testosterone (4), testosterone
ketolaurate (16)
-**sterone**: bolasterone (13), fluoxymesterone (6), oxymesterone (12), prasterone (23), tiomesterone (14)

-**ster-**: mesterolone (15), penmesterol (14), rosterolone (59)

(b) **progestational steroids**

-**gesterone**: dydrogesterone (12), haloprogesterone (11), hydroxyprogesterone (8), medroxyprogesterone (10), norgesterone (14), progesterone (4), segesterone (89)

-**sterone**: dimethisterone (8), ethisterone (4), norethisterone (6), norvinisterone (10)

**various**

-**sterone**: aldosterone (6) (corticosteroid), calusterone (23) (antineoplastic)

-**sterol**: azacosterol (16) (hypocholesterolemic), dihydrotachysterol (1) (antihypoparathyroid), iodocholesterol (131I) (39)

**ster**: nisterime (38) (contraceptive agent), stercuronium iodide (21) (neuromuscular blocking agent)

-**steride** **testosterone reductase inhibitors**

bexlosteride (81), dutasteride (78), epristeride (69), finasteride (62), izonsteride (81), lapisteride (85), turosteride (67)

-**stigmine (d)** **acetylcholinesterase inhibitors**

E.1.2.0 (USAN: cholinesterase inhibitors (physostigmine type))

(a) distigmine bromide (16), eptastigmine (62), ganstigmine (81), neostigmine bromide (4), pyridostigmine bromide (6), quilostigmine (76), rivastigmine (77), terestigmine (77)

(c) eseridine (53)

-**stim** **colony stimulating factors**

I.5.0.0 (USAN: conjugates of two different types of colony-stimulating factors)

(a) ancestim (79) (cell growth factor), garnocestim (85) (immunomodulator), pegacaristim (80) (megakaryocyte growth factor), romiplostim (97) (platelet stimulating factor)

-**distim** **combination of two different types of colony stimulating factors**

(a) leridistim (80), milodistim (74)

-**gramostim** **granulocyte macrophage colony stimulating factor (GM-CSF) types substances**

(a) ecogramostim (62), molgramostim (64), regramostim (64), sargramostim (66)
The use of stems

-grastim granulocyte colony stimulating factor (G-CSF) type substances

(a) filgrastim (64), lenograstim (64), lipegfilgrastim (105), nartograstim (66), pegfilgrastim (85), pegnartograstim (80)

-mostim macrophage stimulating factors (M-CSF) type substances

(a) cilmostim (71), lanimostim (91), mirimostim (65)

-plestim interleukin-3 analogues and derivatives

(USAN: interleukin-3 analogues and derivatives, pleiotropic colony-stimulating factors)

(a) daniplestim (76), muplestim (72)

sulfa- anti-infectives, sulfonamides

S.5.1.0 (BAN: sulpha-)

(USAN: antimicrobial (sulfonamides derivatives))

(b) sulfabenz (17), sulfabenzamide (27), sulfacarbamide (12), sulfacecol (30), sulfacetamide (1), sulfachlorpyridazine (10), sulfachrysoindine (1), sulfactine (23), sulfaclomide (17), sulfaclorazole (25), sulfaclozone (25), sulfadiasulfone sodium (1), sulfadiazine (4), sulfadiazine sodium (4), sulfadicramide (4), sulfadimethoxine (10), sulfadimidine (1), sulfadoxine (20), sulfathidole (1), sulfafurazole (1), sulfaguanidine (4), sulfaguanole (23), sulfalene (12), sulfaloxic acid (15), sulfamazone (40), sulfamerazine (4), sulfamerazine sodium (4), sulfamethizole (1), sulfamethoxazole (14), sulfamethoxypyradizine (8), sulfametomidine (12), sulfametoxydiazine (17), sulfametrole (31), sulfamononmetoxine (11), sulfamoxole (12), sulfanilamide (4), sulfanitran (15), sulfaperin (14), sulfaphenazole (10), sulfaproyline (4), sulfapyrazole (18), sulfapyridine (1), sulfaprinexaline (46), sulfasalazine (55), sulfasomizole (10), sulfasuccinamide (41), sulfasymazine (12), sulfathiazole (4), sulfathiourea (1), sulfatolamide (10), sulfatroxazole (29), sulfatrozole (24)

(b) galsulfa (92), idursulfase (90), sulfarsphenamine (4)

(c) benzylsulfamide (1), glucosulfamide (1), maleylsulfathiazole (1), mesulfamide (4), nitrosulfathiazole (1), phthalitylsulfathiazole (6), phthalysulfathiazole (1), salazodine (22), salazosulfadimidine (11), salazosulfamide (1), salazosulfathiazole (1), stearyl sulfamide (1), succinylsulfathiazole (4), sulfisomidine (1), vanyldsulfamide (1), mafenide (1) (sulfonamide, but not sulfanilamide)

-sulfan antineoplastic, alkylating agents, methanesulfonates

L.2.0.0

(a) busulfan (6), improsulfan (35), mannosulfan (24), piposulfan (15), ritrosulfan (33), treosulfan (26)
<table>
<thead>
<tr>
<th>Stem</th>
<th>Definition</th>
<th>USAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>-tacept</td>
<td>see -cept</td>
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<tr>
<td>-tadekin</td>
<td>see -kin</td>
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<tr>
<td>-tadine</td>
<td><strong>histamine-H(_1)</strong> receptor antagonists, tricyclic compounds</td>
<td></td>
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<td>(USAN: -(a)tadine: tricyclic histaminic-H(_1) receptor antagonists, loratadine derivative)</td>
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</tr>
<tr>
<td>(a)</td>
<td>alcaftadine (94), azatadine (18), cyproheptadine (10), desloratadine (80), loratadine (54), napactadine (46), olopatadine (72), rupatadine (74), vapitadine (95)</td>
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<tr>
<td>(b)</td>
<td>amantadine (15), carmantadine (31), rimantadine (17), somantadine (51), tromantadine (28) (see -mantadine)</td>
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<td>-tant</td>
<td><strong>neurokinin (tachykinin) receptor antagonists</strong></td>
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<tr>
<td>-pitant</td>
<td>neurokinin NK(_1) (substance P) receptor antagonist</td>
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<tr>
<td>(a)</td>
<td>aprepitant (84), befetupitant (91), burapitant (101), casopitant (94), dapitant (74), ezlopitant (82), figopitant (82), fosaprepitant (94), lanepitant (77), maropitant (90), netupitant (90), nolpitantium besilate (75), orvepitant (94), rolapitant (97), serlopitant (100), vestipitant (91), vofopitant (82)</td>
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<tr>
<td>-dutant</td>
<td>neurokinin NK(_2) receptor antagonist</td>
<td></td>
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<tr>
<td>(a)</td>
<td>ibodutant (98), nepadutant (78), saredutant (75)</td>
<td></td>
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<tr>
<td>-nertant</td>
<td>neurotensin antagonist</td>
<td></td>
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<tr>
<td>(a)</td>
<td>meclinertant (88) (replaces reminertant (85))</td>
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<tr>
<td>-netant</td>
<td><strong>neurokinin NK(_3)</strong> receptor antagonist</td>
<td></td>
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<tr>
<td>(a)</td>
<td>osanetant (74), talnetant (81)</td>
<td></td>
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<tr>
<td>-tapide</td>
<td><strong>microsomal triglyceride transfer protein (MTP) inhibitors</strong></td>
<td></td>
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<tr>
<td>H.4.0.0</td>
<td>dirlotapide (91), granotapide (104), implitapide (82), mitratapide (90), lomitapide (101), usistapide (104)</td>
<td></td>
</tr>
</tbody>
</table>
-taxel antineoplastics, taxane derivatives

L.0.0.0

cabazitaxel (98), docetaxel (71), larotaxel (94), milataxel (91), ortataxel (87), paclitaxel (68), paclitaxel ceribate (91), paclitaxel poliglumex (90), simotaxel (94), tesetaxel (93)

-tecan antineoplastics, topoisomerase I inhibitors

L.0.0.0 (USAN: antineoplastics (camptothecine derivatives))

afeletecan (85), atiratecan (101), belotecan (91), cositecan (100), delmotecan (97), diflomotecan (84), elemotecan (92), exatecan (81), exatecan alideximer (89), gimatecan (86), irinotecan (64), lurtotecan (74), mureletecan (85), namitecan (100), pegamotecan (91), rubitecan (82), tenifatecan (102), topotecan (65)

-tepa antineoplastics, thiotepa derivatives

L.2.0.0

(a) azatepa (12), pumitepa (48), thiotepa (10)

-tepine see -pine

-teplase tissue type plasminogen activators, see -ase item VI

-termin see -ermin

-terol bronchodilators, phenethyamine derivatives

(Previously -prenaline or -terenol unofficial)

E.4.0.0

(a) abediterol (104), amiterol (26), arformoterol (90), bitolterol (34), broxaterol (51), carmoterol (91), cimaterol (54), colterol (36), difterol (36), etanterol (53), fenoterol (26), formoterol (44), imoxiterol (52), indacaterol (91), milveterol (97), naminterol (53),
nardeterol (62), olodaterol (101), picumeterol (64), procaterol (37), reprotoerol (30),
rimiterol (26), salmeterol (55), sulfonterol (3l), vilanterol (103), zilpaterol (60), zinterol
(38)

-buterol: bambuterol (49), carbuterol (29), clenbuterol (28), divabuterol (51),
flerobuterol (59), ibuterol (31), mabuterol (46), nisbuterol (38), pirbuterol (30),
tobuterol (45), tulobuterol (40)
cardiac stimulants: metaterol (43), prenalterol (38), xamoterol (48)
previously -prenaline or -terenol: clorprenaline (17), hexoprenaline (21), isoprenaline
(1), levisoprenaline (10), metiprenaline (24), orciprenaline (14), quinprenaline (17)
deterenol (25), soterenol (20)

(b) azacosterol (16), dihydrotachysterol (1), penmesterol (14)

(c) dioxethedrine (6), isoetarine (13), methoxyphenamine (1), pseudoephedrine (11),
salbutamol (20), salmefamol (23), terbutaline (22)

-terone antiandrogens

(Q.2.3.1)

(a) abiraterone (74), benorterone (15), cyproterone (16), delanterone (42), galeterone (105),
inocteron (54), osaterone (68), topteron (39), zanoterone (67)

(b) clomeron (15) (antiestrogen)

(c) cioteronel (62), orteronel (104), oxendolone (42), rosterolone (60),

-tiazem calcium channel blockers, diltiazem derivatives

F.2.1.0

cletiazem (61), diltiazem (30), iprotiazem (56), nictiazem (54), siratiazem (68)
peptides and glycopeptides (for special groups of peptides see -actide, -pressin, -relin, -tocin)

analgesic: leconotide (86), ziconotide (78)

angiogenesis inhibitor: cilengitide (81)

angiotensin convers. inhibitor: teprotide (36)

anti-inflammatory: icroapptide (89)

antianaemic: peginesatide (103)

antiarrythmic: danegaptide (101), rotigaptide (94)

antidepressant: nemifitide (87)

antidiabetic: amlintide (76), davalintide (101), exenatide (89), lixisenatide (99), pramlintide (74), seglitide (57)

antidiarrhoeal: lagatide (75)

antithrombotic: eptifibatide (78)

antiviral: enfuvirtide (85), tifuvirtide (91)

autoimmune disorders: dirucotide (100)

atrial natriuretic factor type substance: anaritide (57), cenderitide (105), neseritide (80), ularitide (69)

cardiac stimulant: carperitide (65)

diagnostic: betiatide (58), bibapcitide (78), ceruletide (34), depreotide (80), fluciclatide (18F) (103), maraciclatide (103), mertiandide (60), pendetide (70), technetium (99mTc) apcitide (78), teriparatide (50)

expectorant (in cystic fibrosis): lancovutide (99)

gastro-intestinal bleeding/antineoplastic: edotreotide (84), ilatreotide (66), lanreotide(64), octreotide (52), pentetreotide (66), vapreotide (62)

gastrointestinal functions normalizing agent: linaclotide (96), plecanatide (104)

growth stimulant-veterinary: nosiheptide (35)

gut motility increasing: ociltide (52)
hormone analogue: semparatide (80),

immunological agents - antineoplastic: almutride (74), delmitide (92), edratide (89), goralatide (72), misamurtide (95), murabutide (49), pentigetide (60), pimelautide (53), preizatide copper acetate (67), rolipoltide (94), romurtide (61), tabilautide (60), temurtide (60), tigapotide (95),

inhibition of growth hormone release: pasireotide (90)

kallicrein inhibitor: ecallantide (93)

melanocortin receptor agonist: afamelanotide (100), bremelanotide (95)

neuromodulator: davunetide (100), ebiratide (56), obinepitide (96)

peptic ulcer: sulglicotide (29), triletide (50)

pulmonary surfactant: lusupultide (80), sinapultide (78)

sedative: emideltide (70)

thrombin fragment: rusalatide (96)

transforming growth factor inhibitor: disitertide (99)

treatment of Alzheimer's disease: vanutide cridificar (100)

treatment of Parkinson's disease: doreptide (58), pareptide (38)

treatment of coeliac disease: larazotide (99)

-glutide Glucagon-like Peptide (GLP) analogues

albiglutide (97), dulaglutide (103), elsiglutide (104), liraglutide (87), semaglutide (101), taspolgululate (99), teduglutide (90)

-motide immunological agents for active immunization

amilomotide (105), disomotide (94), elpamotide (103), ovemotide (94), tertomotide (98), tiliptomotide (82)

(b) defibrotide (44) (nucleotide), diamfenetide (28) (fasciolicide), diclotromutide (19) (behaviour modificator), fludroxyctride (12), glisentide (58)

(c) angiotensin II (65), angiotensinamidte (12)
-tidine  histamine-H$_2$-receptor antagonists, cimetidine derivatives

G.2.0.0  (BAN: H$_2$-receptor antagonists of the cimetidine group)
(USAN: H$_2$-receptor antagonists (cimetidine type))

(a)  bisfentidine (57), cimetidine (33), dalcotidine (76), donetidine (56), ebrotidine (57),
etintidine (44), famotidine (48), lafutidine (70), lamtidine (48), lavoldidine (61) (previously
loxtidine (48)), lupitidine (53), mifentidine (50), niperotidine (54), nizatidine (48),
osutidine (76), oxmetidine (44), pibutidine (78), quisultidine (47) (replaced by quisultazine
(51)), ramixotidine (55), ranitidine (41), roxatidine (54), sufotidine (54), tiotidine (44),
tuvatidine (54), venritidine (67), zaltidine (54)

(b)  azacitidine (40) (antineoplastic), benzethidine (9), furethidine (9), guanethidine (11),
hexetidine (6), hydroxypethidine (5), pethidine (4), propinetidine (12)

(c)  metiamide (30)

-tiline  see -triptyline

-tinib  tyrosine kinase inhibitors

L.0.0.0  

(a)  afatinib (104), amuvatinib (103), axitinib (94), bafetinib (101), bosutinib (94),
cabozantinib (105), canertinib (87), crizotinib (103), dacomitinib (103), dasatinib (94),
dovitinib (97), erlotinib (85), foretinib (102), fostamatinib (100), gefitinib (85), imatinib
(86), lapatinib (89), lenvatinib (104), lestaurtinib (91), linsitinib (104), masitinib (96),
mubritinib (90), neratinib (97), nilotinib (95), oclacitinib (105), orantinib (103),
pacritinib (104), pelitinib (93), ponatinib (104), quizartinib (104), radotinib (104),
ruxolitinib (103), saracatinib (99), selumetinib (100), sunitinib (93), tandutinib (91),
telatinib (96), tivantinib (103), tofacitinib (105), trametinib (105), varlitinib (102)

-tirelin  see -relin
**-tizide**  
**diuretics, chlorothiazide derivatives**

N.1.2.1  
(USAN: thiazide: diuretics (thiazide derivatives))

(a) altizide (13), bemetizide (27), butizide (13), carmetizide (30), epitizide (13), hydrobentizide (14), mebutizide (15), paraflutizide (16), penflutizide (29), sumetizide (20)

(c) bendroflumethiazide (11), benzthiazide (10), chlorothiazide (8), cyclopenthiazide (12), cyclothiazide (12), disulfamide (11), ethiazide (14), flumethiazide (10), hydrochlorothiazide (10), hydroflumethiazide (10), methyclothiazide (11), polythiazide (12), teclothiazide (12), trichlormethiazide (11)

**-tocin**  
**oxytocin derivatives**

Q.1.2.0

(a) argiprestocin (13), aspartocin (11), carbetocin (45), cargutocin (35), demoxytocin (22), nacartocin (49), oxytocin (13)

**-toin (d)**  
**antiepileptics, hydantoin derivatives**

A.3.1.1

(a) albutoin (13), doxenitoin (31), ethotoin (6), fosphenytoin (62), imepitoin (96), mephenytoin (1), metetoin (12), phenytoin (4)

ropitoin (40) (H.2.0.0.)

(b) clodantoin (13) (antifungal), nitrofurantoin (11) (antibacterial)

**-trakin**  
see -kin

**-trakinra**  
see -kinra

**-tredekin**  
see -kin
### -trexate  
**folic acid analogues**

L.4.0.0  
(USAN: antimetabolites (folic acid analogues))

![Folic Acid Analogue Structure]

(a) edatrexate (61), ketotrextate (50), methotrexate (10), pralatrexate (92), trimetrexate (46)

(c) aminopterin sodium (04)

### -trexed  
**antineoplastics; thymidylicate synthetase inhibitors**

L.0.0.0  
nolatrexed (78), pemetrexed (78), plevitrexed (89), raltitrexed (94)

### -tricin  
**antibiotics, polyene derivatives**

S.6.2.0  
(a) mepartricin (34), partricin (27)

(b) tyrothricin (1)

(c) amphotericin B (10), candidicin (17), Filipin (20), hachimycin (23), hamycin (17), levorin (15), mocimycin (28), natamycin (15), nystatin (6), pecilocin (16)

### tril/trilat  
**endopeptidase inhibitors**

H.3.0.0  
candoxatril (62), candoxatrilat (62)

- **-dotril**  
dexecadotril (73), ecadotril (68), fasidotril (74), racecadotril (73)

- **-lutril**  
daglutril (90)

- **-patril/-patrilat**  
gemopatrilat (84), ilepatril (95), omapatrilat (78), sampatrilat (74)
INN – The use of stems

**-triptan**  
**serotonin (5-HT\(_1\)) receptor agonists, sumatriptan derivatives**

C.0.0.0  
(USAN: antimigraine agents (5-HT\(_1\) receptor agonists))

(a) almotriptan (76), avitriptan (76), donitriptan (82), eletriptan (74), frovatriptan (78), naratriptan (69), oxitriptan (39), rizatriptan (75), sumatriptan (59), zolmitriptan (74)

(c) alniditan (72)

**-triptyline**  
**antidepressants, dibenzo\([a,d]\)cycloheptane or cyclopheptene derivatives**

C.3.2.0  
(USAN: antidepressants (dibenzo\([a,d]\)cycloheptane derivatives))

![Chemical structures]

(a) amitriptyline (11), butriptyline (16), cotriptyline (26), intriptyline (26), nortriptyline (12), ocriptyline (33), protriptyline (14), amitriptylinoxide (36), demexiptiline (43), levoprotiline (56), noxiptiline (20), oxaprotiline (45), setiptiline (56)

(b) oxitriptyline (21) (anticonvulsant)

(c) hepzidine (15)

see also Pharm S/Nom 970

**-troban**  
**thromboxane A\(_2\)-receptor antagonists; antithrombotic agents**

I.2.1.0  
(USAN: antithrombotics (thromboxane A\(_2\) receptor antagonists))

argatroban (57), daltroban (57), domitroban (73), ifetroban (71), linotroban (69), mipitroban (73), ramatroban (73), sulotroban (55), terutroban (93)

**-trodast**  
see -ast
trop  atropine derivatives

E.2.0.0  (USAN: trop- ; or –trop-)

(a)  parasympatholytic/anticholinergic: E.2.2.0:
     tertiary amines:
     atropine oxyde (12), benztropine (4), decitropine (18), etybenztropine (12), eucatropine (1),
     tropatepine (28), tropicamide (11), tropigline (8), tropodifene (18)

     closely related:
     esbatropate (65)

     quaternary ammonium salts:
     atropine methonitrate (4), butropium bromide (30), ciclotropium bromide (50),
     cimetropium bromide (51), darotropium bromide (99), flutropium bromide (50),
     homatropine methylbromide (1), ipratropium bromide (28), octatropine methylbromide (10),
     oxitropium bromide (36), phenactropinium chloride (8), ritropirronium bromide (33),
     sevitropium mesilate (56), sintropium bromide (47), sultroponium (18), tematropium
     metilsulfate (64), tiotropium bromide (67), tipetroprim bromide (42), tropenziline bromide
     (11), xenytropium bromide (15)

     various:
     clobenztropine (13) (antihistaminic), cyheptropine (15) (antiarrhythmic), deptropine (12)
     (antiasthmatic), revatropate (74) (bronchodilator), tropabazate (41) (tranquillizer),
     tropanserin (55) (serotonin receptor antagonist), tropapride (48) (antipsychotic), tropirine
     (20) (respiratory disorders), tropantiol (97) (chelating agent), tropisetron (62) (serotonin
     antagonist)

(b)  dextropropoxyphene (7), somatropin (56), somatropin pegol (103), varfollitropin alfa (101)

(c)  parasympatholytic/anticholinergic, tertiary amines:
     poskine (8), prampine (11), tigloidin (14)

     various:
     zepastine (26) (antihistaminic)

-uplase  urokinase type plasminogen activator, see -ase item VII
-uridine uridine derivatives used as antiviral agents and as antineoplastics
(USAN: antivirals; antineoplastics (uridine derivatives))

S.5.3.0
L.4.0.0

L.4.0.0: broxuridine (30), doxifluridine (44)
related: carmofur (45), clanfenur (58), tegafur (41)
S.5.3.0: fialuridine (68), floxuridine (16), fosfluridine tidoxil (93), idoxuridine (17), navuridine (84), ropidoxuridine (97), trifluuridine (37), uridine triacetate (103)

-vudine (USAN: -vudine: antineoplastics; antivirals (zidovudine type))
(a) alovudine (68), brivudine (59), clevudine (78), epervudine (61), fosalvudine tidoxil (95), fozivudine tidoxil (73), lamivudine (66), netivudine (72), sorivudine (64), stavudine (65), telbivudine (88), zidovudine (56)
(c) edoxudine (52)

-vaptan (x) vasopressin receptor antagonists
H.0.0.0
(a) conivaptan (82), lixivaptan (83), mozavaptan (87), nelivaptan (98), relcovaptan (82), satavaptan (93), tolvaptan (83)

-vastatin see -stat

-vec see -gene for gene therapy products

-verine spasmolytics with a papaverine-like action
F.1.0.0 (USAN: spasmolytic agents (papaverine type))
(a) alverine (16), amifloverine (28), bietamiverine (6), butaverine (13), camiverine (29), caroverine (28), clofeverine (31), demelverine (17), denaverine (25), dextsecoverine (53), dicycloverine (6), dihexyverine (4), dipiproverine (10), diproteverine (51), drotaverine (17),
elziverine (57), ethaverine (4), febuverine (27), fenoverine (28), flovverine (28), heptaverine (16), ibuverine (21), idaieverine (55), mebeverine (14), milverine (52), mofloverine (28), moxaverine (36), nafiverine (16), niceverine (15), octaverine (18), pargeverine (38), pentoxyverine (6), pramiverine (21), praverine (41), propiverine (45), rociverine (33), salfluverine (29), salverine (15), secoverine (38), temiverine (76), zarberine (59)  

**Related:**  
fenpiverinium bromide (26), pinaverium bromide (32)

(b)  
cinnamaverine (10) (anticholinergic, tert. amine), diaveridine (18)

(c)  
spasmolytics chemically related to some of the above INN ending in -verine

<table>
<thead>
<tr>
<th>vin- and -vin- (x)</th>
<th>vinca alkaloids</th>
</tr>
</thead>
<tbody>
<tr>
<td>(USAN: vin-; or -vin-)</td>
<td>B.1.0.0 stimulation of cerebrovascular circulation</td>
</tr>
<tr>
<td></td>
<td>apovincamine (48), brovincamine (42), vinburnine (45), vincamine (22), vinceranol (37), vincantril (51), vinconate (47), vindeburnol (49), vinmegallate (59), vinpocetine (36), vinpoleine (35), vintoperol (61)</td>
</tr>
</tbody>
</table>

| L.5.0.0 cytostatic | vinblastine (12), vincristine (13), vindesine (35), vinipidine (50), vinflunine (75), vinformide (38), vinfosiltine (64), vinglycinate (16), vinleucinol (64), vinleurosine (13), vinorelbine (57), vinrosidine (13), vintriptol (51), vinzolidine (46) |

(b)  
barbiturates  
vinbarbital (1), vinylbital (12)  
others: vincoflos (28) (phosphate, anthelmintic), vintiamol (16) (vitamin B derivative, antineuralgic)

<table>
<thead>
<tr>
<th>vir</th>
<th>antivirals (undefined group)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.5.3.0</td>
<td>(USAN: -vir; -vir; or vir-: antivirals)</td>
</tr>
</tbody>
</table>
| (a) | alisporivir (100), alvircept sudotox (69), amdoxovir (85), amenamevir (100), amitivir (67), atevidrine (69), balapiravir (100), bevirimat (96), daclatasvir (105), delavirdine (71), denotivir (70), dolutegravir (105), efavirenz (78), elvitegravir (97), enfuvirtide (85), enviradene (49), enviroxime (44), favipiravir (98), filibuvir (101), letespivir (104), litomeglovir (84), loviride (70), maribavir (80), nesbuvir (98), nevirapine (66), opaviraline (83), pirodavir (63), raltegravir (97), ribavirin (31), rupintrivir (88), taribavirin (95), ruxituvir (105), sibuvir (80), sofosbuvir (98), sofuvir (80), tavaborivir (88), favipiravir (98), adefovir (85), sibuvir (80), simeprevir (105), telaprevir (105), felbuvir (98), somavir (80), tegrivir (105), favipiravir (98), abacavir (85), simexevir (105), tetaprevir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favipiravir (88), abacavir (85), simexevir (105), tetravir (105), favi...
talviraline (75), tecovirimat (99), tegobuvir (103), tifuvirtide (91), tivirapine (74),
tomeglovir (84), trovirdine (73), umifenovir (103), viroxime (49), ziniviroxime (44)

-ervas
neuraminidase inhibitors: laninamivir (100), oseltamivir (80), peramivir (86), zanamivir (72)

-calivos
neuraminidase inhibitors: laninamivir (100), oseltamivir (80), peramivir (86), zanamivir (72)

carbocyclic nucleosides: abacavir (76), entecavir (82), lobucavir (72)

-ciclovir
bicyclic heterocycle compounds: aciclovir (42), buciclovir (52), desciclovir (55),
detiviclovir (86), famciclovir (61), ganciclovir (56), lagociclovir (101), lagociclovir valactate (101), omaciclovir (84), penciclovir (61), rociclovir (62), tiviclovir (86),
valaciclovir (69), valganciclovir (78), valomaciclovir (84)

-foviz
phosphonic acid derivatives: adefovir (72), alamifovir (89), besifovir (105), cidofovir (72),
pradefovir (93), tenofovir (82)

-gosivir
guloside inhibitors: celgosivir (77)

-navir
HIV protease inhibitors: amprenavir (79), atazanavir (88), brecanavir (94), darunavir (88),
droxinavir (74), fosamprenavir (83), indinavir (74), lasinavir (76), lopinavir (80),
mozenavir (84), nelfinavir (76), palinavir (74), ritonavir (74), saquinavir (69),
telaprevir (73), tipranavir (73)

-previr
Hepatitis Virus C (HVC) protease inhibitors: asunaprevir (105), boceprevir (97),
ciluprevir (90), danoprevir (102), narlaprevir (102), simaprevir (105),
telaprevir (94), vaniprevir (103)

-virine
Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTI): capravirine (83), dapivirine
(86), emivirine (82), etravirine (88), fosdevirine (103), lersivirine (101),
rilpivirine (82)

-viroc
CCR5 (Chemokine CC motif receptor 5) receptor antagonists: ancriviroc (92), aplaviroc
(94), cenicriviroc (103), maraviroc (94), vicriviroc (94)

-virsen
see -rsen

-virumab
see mab

(b) virginiamycin (18), viridofulvin (16)

(c) aranotin (21), arildone (38), avridine (50), didanosine (64), disoxaril (55), dimepranol
(42), foscarnet sodium (42), fosfonet sodium (35), ketoxal (22), impacarzine (36),
inosine (42), lodenosine (75), metisazone (14), moroxydine (22), pleconaril (77),
tilorone (24), xenazoic acid (11)

-cept
see -cept
-virine see -vir

-viroc see -vir

-virsen see -rsen

-virumab see -mab

-vos see -fos

-vudine see -uridine

-xaban blood coagulation factor $X_A$ inhibitors, antithrombotics

(a) apixaban (93), betrixaban (98), darexaban (104), edoxaban (99), eribaxaban (98), fidexaban (91), letaxaban (104), otamixaban (86), razaxaban (90), rivaroxaban (90),

-xanox see -ox/-alox

-yzine see -izine

-zafone alozafone derivatives

C.1.0.0

(a) alozafone (40), avizafone (64), ciprazafone (50), dinazafone (46), dulozafone (56), lorzafone (48), oxazafone (45), rilmazafone (55)

-zepine see -pine

-zolast see -ast
-zone  see -buzone

-zotan  serotonin 5-HT$_{1A}$ receptor agonists/antagonists acting primarily as neuroprotectors

ebalzotan (72), lecozotan (93), naluzotan (101), osemozotan (87), piclozotan (92),
robalzotan (90), sarizotan (94)
ANNEX 1

PROCEDURE FOR THE SELECTION OF RECOMMENDED INTERNATIONAL NONPROPRIETARY NAMES FOR PHARMACEUTICAL SUBSTANCES

The following procedure shall be followed by the World Health Organization (hereinafter also referred to as “WHO”) in the selection of recommended international nonproprietary names for pharmaceutical substances, in accordance with resolution WHA3.11 of the World Health Assembly, and in the substitution of such names.

Article 1
Proposals for recommended international nonproprietary names and proposals for substitution of such names shall be submitted to WHO on the form provided therefor. The consideration of such proposals shall be subject to the payment of an administrative fee designed only to cover the corresponding costs of the Secretariat of WHO (“the Secretariat”). The amount of this fee shall be determined by the Secretariat and may, from time to time, be adjusted.

Article 2
Such proposals shall be submitted by the Secretariat to the members of the Expert Advisory Panel on the International Pharmacopoeia and Pharmaceutical Preparations designated for this purpose, such designated members hereinafter referred to as “the INN Expert Group”, for consideration in accordance with the “General principles for guidance in devising International Nonproprietary Names for Pharmaceutical Substances”, annexed to this procedure. The name used by the person discovering or first developing and marketing a pharmaceutical substance shall be accepted, unless there are compelling reasons to the contrary.

Article 3
Subsequent to the examination provided for in article 2, the Secretariat shall give notice that a proposed international nonproprietary name is being considered.

(a) Such notice shall be given by publication in *WHO Drug Information* and by letter to Member States and to national and regional pharmacopoeia commissions or other bodies designated by Member States.

(i) Notice shall also be sent to the person who submitted the proposal (“the original applicant”) and other persons known to be concerned with a name under consideration.

(b) Such notice shall:
   (i) set forth the name under consideration;
   (ii) identify the person who submitted the proposal for naming the substance, if so requested by such person;
   (iii) identify the substance for which a name is being considered;
   (iv) set forth the time within which comments and objections will be received and the person and place to whom they should be directed;
   (v) state the authority under which WHO is acting and refer to these rules of procedure.

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2 See Annex 2

3 Before 1987, lists of international nonproprietary names were published in the *Chronicle of the World Health Organization*. 
In forwarding the notice, the Secretariat shall request that Member States take such steps as are necessary to prevent the acquisition of proprietary rights in the proposed name during the period it is under consideration by WHO.

Article 4
Comments on the proposed name may be forwarded by any person to WHO within four months of the date of publication, under article 3, of the name in WHO Drug Information.

Article 5
A formal objection to a proposed name may be filed by any interested person within four months of the date of publication, under article 3, of the name in WHO Drug Information. Such objection shall:
(i) identify the person objecting;
(ii) state his or her interest in the name;
(iii) set forth the reasons for his or her objection to the name proposed.

Article 6
Where there is a formal objection under article 5, WHO may either reconsider the proposed name or use its good offices to attempt to obtain withdrawal of the objection. Without prejudice to the consideration by WHO of a substitute name or names, a name shall not be selected by WHO as a recommended international nonproprietary name while there exists a formal objection thereto filed under article 5 which has not been withdrawn.

Article 7
Where no objection has been filed under article 5, or all objections previously filed have been withdrawn, the Secretariat shall give notice in accordance with subsection (a) of article 3 that the name has been selected by WHO as a recommended international nonproprietary name.

Article 8
In forwarding a recommended international nonproprietary name to Member States under article 7, the Secretariat shall:
(a) request that it be recognized as the nonproprietary name for the substance; and
(b) request that Member States take such steps as are necessary to prevent the acquisition of proprietary rights in the name and to prohibit registration of the name as a trademark or trade name.

Article 9
(a) In the extraordinary circumstance that a previously recommended international nonproprietary name gives rise to errors in medication, prescription or distribution, or a demonstrable risk thereof, because of similarity with another name in pharmaceutical and/or prescription practices, and it appears that such errors or potential errors cannot readily be resolved through other interventions than a possible substitution of a previously recommended international nonproprietary name, or in the event that a previously recommended international nonproprietary name differs substantially from the nonproprietary name approved in a significant number of Member States, or in other such extraordinary circumstances that justify a substitution of a recommended international nonproprietary name, proposals to that effect may be filed by any interested person. Such proposals shall be submitted on the form provided therefore and shall:

(i) identify the person making the proposal;

(ii) state his or her interest in the proposed substitution; and

(iii) set forth the reasons for the proposal; and
(iv) describe, and provide documentary evidence regarding, the other interventions undertaken in an effort to resolve the situation, and the reasons why these other interventions were inadequate.

Such proposals may include a proposal for a new substitute international nonproprietary name, devised in accordance with the General principles, which takes into account the pharmaceutical substance for which the new substitute international nonproprietary name is being proposed.

The Secretariat shall forward a copy of the proposal, for consideration in accordance with the procedure described in subsection (b) below, to the INN Expert Group and the original applicant or its successor (if different from the person bringing the proposal for substitution and provided that the original applicant or its successor is known or can be found through diligent effort, including contacts with industry associations).

In addition, the Secretariat shall request comments on the proposal from:

(i) Member States and national and regional pharmacopoeia commissions or other bodies designated by Member States (by including a notice to that effect in the letter referred to in article 3(a), and

(ii) any other persons known to be concerned by the proposed substitution.

The request for comments shall:

(i) state the recommended international nonproprietary name that is being proposed for substitution (and the proposed substitute name, if provided);

(ii) identify the person who submitted the proposal for substitution (if so requested by such person);

(iii) identify the substance to which the proposed substitution relates and reasons put forward for substitution;

(iv) set forth the time within which comments will be received and the person and place to whom they should be directed; and

(v) state the authority under which WHO is acting and refer to these rules of procedure.

Comments on the proposed substitution may be forwarded by any person to WHO within four months of the date of the request for comments.

(b) After the time period for comments referred to above has elapsed, the Secretariat shall forward any comments received to the INN Expert Group, the original applicant or its successor and the person bringing the proposal for substitution. If, after consideration of the proposal for substitution and the comments received, the INN Expert Group, the person bringing the proposal for substitution and the original applicant or its successor all agree that there is a need to substitute the previously recommended international nonproprietary name, the Secretariat shall submit the proposal for substitution to the INN Expert Group for further processing.

Notwithstanding the foregoing, the original applicant or its successor shall not be entitled to withhold agreement to a proposal for substitution in the event the original applicant or its successor has no demonstrable continuing interest in the recommended international nonproprietary name proposed for substitution.
In the event that a proposal for substitution shall be submitted to the INN Expert Group for further processing, the INN Expert Group will select a new international nonproprietary name in accordance with the General principles referred to in article 2 and the procedure set forth in articles 3 to 8 inclusive. The notices to be given by the Secretariat under article 3 and article 7, respectively, including to the original applicant or its successor (if not the same as the person proposing the substitution, and provided that the original applicant or its successor is known or can be found through diligent effort, including contacts with industry associations), shall in such event indicate that the new name is a substitute for a previously recommended international nonproprietary name and that Member States may wish to make transitional arrangements in order to accommodate existing products that use the previously recommended international nonproprietary name on their label in accordance with national legislation.

If, after consideration of the proposal for substitution and the comments received in accordance with the procedure described above, the INN Expert Group, the original applicant or its successor and the person bringing the proposal for substitution do not agree that there are compelling reasons for substitution of a previously recommended international nonproprietary name, this name shall be retained (provided always that the original applicant or its successor shall not be entitled to withhold agreement to a proposal for substitution in the event that the original applicant or its successor has no demonstrable continuing interest in the recommended international nonproprietary name proposed to be substituted). In such an event, the Secretariat shall advise the person having proposed the substitution, as well as the original applicant or its successor (if not the same as the person proposing the substitution, and provided that the original applicant or its successor is known or can be found through diligent effort, including contacts with industry associations), Member States, national and regional pharmacopoeia commissions, other bodies designated by Member States, and any other persons known to be concerned by the proposed substitution that, despite a proposal for substitution, it has been decided to retain the previously recommended international nonproprietary name (with a description of the reason(s) why the proposal for substitution was not considered sufficiently compelling).
ANNEX 2

GENERAL PRINCIPLES FOR GUIDANCE IN DEVISING INTERNATIONAL NONPROPRIETARY NAMES FOR PHARMACEUTICAL SUBSTANCES*

1. International Nonproprietary Names (INN) should be distinctive in sound and spelling. They should not be inconveniently long and should not be liable to confusion with names in common use.

2. The INN for a substance belonging to a group of pharmacologically related substances should, where appropriate, show this relationship. Names that are likely to convey to a patient an anatomical, physiological, pathological or therapeutic suggestion should be avoided.

These primary principles are to be implemented by using the following secondary principles:

3. In devising the INN of the first substance in a new pharmacological group, consideration should be given to the possibility of devising suitable INN for related substances, belonging to the new group.

4. In devising INN for acids, one-word names are preferred; their salts should be named without modifying the acid name, e.g. "oxacillin" and "oxacillin sodium", “ibufenac” and “ibufenac sodium”.

5. INN for substances which are used as salts should in general apply to the active base or the active acid. Names for different salts or esters of the same active substance should differ only in respect of the name of the inactive acid or the inactive base.

For quaternary ammonium substances, the cation and anion should be named appropriately as separate components of a quaternary substance and not in the amine-salt style.

6. The use of an isolated letter or number should be avoided; hyphenated construction is also undesirable.

7. To facilitate the translation and pronunciation of INN, “f” should be used instead of “ph”, “t” instead of “th”, “e” instead of “ae” or “oe”, and “i” instead of “y”; the use of the letters “h” and “k” should be avoided.

8. Provided that the names suggested are in accordance with these principles, names proposed by the person discovering or first developing and marketing a pharmaceutical preparation, or names already officially in use in any country, should receive preferential consideration.

9. Group relationship in INN (see Guiding Principle 2) should if possible be shown by using a common stem. The following list contains examples of stems for groups of substances, particularly for new groups. There are many other stems in active use. Where a stem is shown without any hyphens it may be used anywhere in the name.
<table>
<thead>
<tr>
<th>Latin</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>-acum</td>
<td>anti-inflammatory agents, ibufenac derivatives</td>
</tr>
<tr>
<td>-adolum</td>
<td>analgesics</td>
</tr>
<tr>
<td>-adol</td>
<td>antiasthmatic, antiallergic substances not acting primarily as antihistaminics</td>
</tr>
<tr>
<td>-astum</td>
<td>antihistaminics</td>
</tr>
<tr>
<td>-azepamum</td>
<td>diazepam derivatives</td>
</tr>
<tr>
<td>bol</td>
<td>anabolic steroids</td>
</tr>
<tr>
<td>-cain-</td>
<td>class I antiarrhythmics, procainamide and lidocaine derivatives</td>
</tr>
<tr>
<td>-cainum</td>
<td>local anaesthetics</td>
</tr>
<tr>
<td>cef-</td>
<td>antibiotics, cefalosporanic acid derivatives</td>
</tr>
<tr>
<td>-cilinum</td>
<td>antibiotics, 6-aminopenicillanic acid derivatives</td>
</tr>
<tr>
<td>-conazolum</td>
<td>systemic antifungal agents, miconazole derivatives</td>
</tr>
<tr>
<td>cort</td>
<td>corticosteroids, except prednisolone derivatives</td>
</tr>
<tr>
<td>-coxibum</td>
<td>selective cyclo-oxygenase inhibitors</td>
</tr>
<tr>
<td>-entanum</td>
<td>endothelin receptor antagonists</td>
</tr>
<tr>
<td>gab</td>
<td>gabamimetic agents</td>
</tr>
<tr>
<td>gado-</td>
<td>diagnostic agents, gadolinium derivatives</td>
</tr>
<tr>
<td>-gatranum</td>
<td>thrombin inhibitors, antithrombotic agents</td>
</tr>
<tr>
<td>gest</td>
<td>steroids, progestogens</td>
</tr>
<tr>
<td>gli</td>
<td>antihyperglycaemics</td>
</tr>
<tr>
<td>io-</td>
<td>iodine-containing contrast media</td>
</tr>
<tr>
<td>-metacinum</td>
<td>anti-inflammatory, indometacin derivatives</td>
</tr>
<tr>
<td>-mycinum</td>
<td>antibiotics, produced by <em>Streptomyces</em> strains</td>
</tr>
<tr>
<td>-nidazolum</td>
<td>antiprotozoals and radiosensitizers, metronidazole derivatives</td>
</tr>
<tr>
<td>-ololum</td>
<td>1β adrenoreceptor antagonents</td>
</tr>
<tr>
<td>-oxacinum</td>
<td>antibacterials, nalidixic acid derivatives</td>
</tr>
<tr>
<td>-platinum</td>
<td>antineoplastic agents, platinum derivatives</td>
</tr>
<tr>
<td>-poetinum</td>
<td>erythropoietin type blood factors</td>
</tr>
<tr>
<td>-pril(at)um</td>
<td>angiotensin-converting enzyme inhibitors</td>
</tr>
<tr>
<td>-profenum</td>
<td>anti-inflammatory agents, ibuprofen derivatives</td>
</tr>
<tr>
<td>prost</td>
<td>prostaglandins</td>
</tr>
<tr>
<td>-relinum</td>
<td>pituitary hormone release-stimulating peptides</td>
</tr>
<tr>
<td>-sartanum</td>
<td>angiotensin II receptor antagonants, antihypertensive (non-peptidic)</td>
</tr>
<tr>
<td>-vaptanum</td>
<td>vasopressin receptor antagonents</td>
</tr>
<tr>
<td>vin-</td>
<td>vinca alkaloids</td>
</tr>
</tbody>
</table>

* In its twentieth report (WHO Technical Report Series, No. 581, 1975), the WHO Expert Committee on Nonproprietary Names for Pharmaceutical Substances reviewed the general principles for devising, and the procedures for selecting, international nonproprietary names (INN) in the light of developments in pharmaceutical compounds in recent years. The most significant change has been the extension to the naming of synthetic chemical substances of the practice previously used for substances originating in or derived from natural products. This practice involves employing a characteristic "stem" indicative of a common property of the members of a group. The reasons for, and the implications of, the change are fully discussed.
ANNEX 3

General policies for monoclonal antibodies

- INN for monoclonal antibodies (mAbs) are composed of a prefix, a substem A, a substem B and a suffix.

- The common stem for mAbs is -mab, placed as a suffix.

- The stem -mab is to be used for all products containing an immunoglobulin variable domain which binds to a defined target.

- Substem B indicates the species on which the immunoglobulin sequence of the mAb is based:

<table>
<thead>
<tr>
<th>Substem</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>rat</td>
</tr>
<tr>
<td>axo (pre-sub-stem)</td>
<td>rat/mouse</td>
</tr>
<tr>
<td>e</td>
<td>hamster</td>
</tr>
<tr>
<td>i</td>
<td>primate</td>
</tr>
<tr>
<td>o</td>
<td>mouse</td>
</tr>
<tr>
<td>u</td>
<td>human</td>
</tr>
<tr>
<td>xi</td>
<td>chimeric</td>
</tr>
<tr>
<td>xizu</td>
<td>chimeric/humanized</td>
</tr>
<tr>
<td>zu</td>
<td>humanized</td>
</tr>
</tbody>
</table>

The distinction between chimeric and humanized antibodies is as follows:

**Chimeric**: A chimeric antibody is one of which both chain types are chimeric as a result of antibody engineering. A chimeric chain is a chain that contains a foreign variable domain (V-D-J-REGION) (originating from one species other than human, or synthetic) linked to a constant region (C-REGION) of human origin.

**Humanized**: A humanized antibody is one of which both chain types are humanized as a result of antibody engineering. A humanized chain is a chain in which the complementarity determining regions (CDR) of the variable domains are foreign (originating from one species other than human, or synthetic) whereas the remaining chain is of human origin. By extension an antibody is described as humanized if more recent protocols were used for the humanization.

The -xizu- infix is used for an antibody having both chimeric and humanized chains.
The -axo- infix is used for an antibody having both rat and mouse chains.
Substem A indicates the target (molecule, cell, organ) class:

- **-b(a)-** bacterial
- **-c(i)-** cardiovascular
- **-f(u)-** fungal
- **-k(i)-** interleukin
- **-l(i)-** immunomodulating
- **-n(e)- (under discussion)** neural
- **-s(o)-** bone
- **-tox(a)-** toxin
- **-t(u)-** tumour
- **-v(i)-** viral

In principle, a single letter, e.g. **-b-** for bacterial is used as substem A. Whenever substem B starts with a consonant (e.g. x or z), to avoid problems in pronunciation, an additional vowel indicated in the table, e.g. **-ba-** is inserted.

**Prefix**

The prefix should be random, e.g. the only requirement is to contribute to an euphonious and distinctive name.

**Second word**

If the product is radiolabelled or conjugated to another chemical, identification of this conjugate is accomplished by use of a separate, second word or acceptable chemical designation. For instance, for mAbs conjugated to a toxin, the suffix **-tox** can be used in the second word.

If the monoclonal antibody is used as a carrier for a radioisotope, the latter will be listed first in the INN, e.g. *technetium (99mTc) nofetumomab merpentan* (81)(42).

The prefix **peg-** can be used for pegylated mAbs, but this should be avoided if it leads to over-long INN. In most cases, it is best to adopt two-word INN for pegylated mAbs, with the first word describing the mAb and the second being pegol or a related designation.

**References**

2. World Health Organization. International Nonproprietary Names (INN) for biological and biotechnological substances (a review), INN Working Document 05.179, update November 2009*

* These documents are available on the INN Programme Website at:  
ANNEX 4

INNs FOR GENE THERAPY PRODUCTS

The following nomenclature scheme was adopted by the members of the INN Expert Group designated to deal with the selection of nonproprietary names in December 2005 after a broad consultative process. A two-word name approach has been selected:

**Word 1**
- **gene** gene component
  - **-ermin-** growth factor
  - **-kin-** interleukin
  - **-lim-** immunomodulator
  - **-mul-** multiple gene
  - **-tusu-** tumour suppression

**Word 2**
- **-vec** vector component is a virus
  - **-repvec** replicating viral vector
    - **-adeno-** adenovirus
    - **-cana-** canarypox virus
    - **-herpa-** herpes virus
    - **-lenti-** lentivirus
    - **-morbilli-** paramoxyviridae morbillivirus
    - **-parvo-** adeno-associated virus (parvoviridae dependovirus)
    - **-retro-** other retrovirus
    - **-vaci-** vaccinia virus

**-plasmid** in case the vector is a plasmid

<table>
<thead>
<tr>
<th>prefix</th>
<th>infix</th>
<th>suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>random to contribute to euphonious and distinctive name</td>
<td>-adeno-</td>
<td>adenovirus</td>
</tr>
<tr>
<td></td>
<td>-cana-</td>
<td>canarypox virus</td>
</tr>
<tr>
<td></td>
<td>-herpa-</td>
<td>herpes virus</td>
</tr>
<tr>
<td></td>
<td>-lenti-</td>
<td>lentivirus</td>
</tr>
<tr>
<td></td>
<td>-morbilli-</td>
<td>paramoxyviridae morbillivirus</td>
</tr>
<tr>
<td></td>
<td>-parvo-</td>
<td>adeno-associated virus (parvoviridae dependovirus)</td>
</tr>
<tr>
<td></td>
<td>-retro-</td>
<td>other retrovirus</td>
</tr>
<tr>
<td></td>
<td>-vaci-</td>
<td>vaccinia virus</td>
</tr>
<tr>
<td>random to contribute to euphonious and distinctive name</td>
<td>-plasmid</td>
<td>plasmid</td>
</tr>
</tbody>
</table>

In case of non-plasmid naked DNA, there is no need for a second word in the name.
In case of antisense oligonucleotides, please refer to the already existing stem -rsen.
## ANNEX 5

### Reference to publications containing proposed lists of INNs

<table>
<thead>
<tr>
<th>List no. and reference</th>
<th>List no. and reference</th>
</tr>
</thead>
</table>

Lists 1-105 of proposed INN are included in Cumulative List
No. 14, WHO, Geneva, 2011 (available in CD-ROM only)
ANNEX 6

WHY INNs?

Since the number of drug substances being registered during the last decades is constantly increasing, there is a strong need to ensure the identification of each pharmaceutical compound by a unique, universally available and accepted name. The existence of an international nomenclature system for pharmaceutical products is crucial for the clear identification, safe prescription and dispensing of medicines to patients, and for communication and exchange of information among health professionals and scientists worldwide.

An International Nonproprietary Name (INN) identifies a pharmaceutical substance by a unique name that is globally recognized and is public property. A nonproprietary name is also known as a generic name. Generic names are intended to be used in pharmacopoeias, labeling, advertising, drug regulation and scientific literature.

WHO has a constitutional mandate to offer recommendations to its Member States on any matter that falls within its competence. This includes setting norms and standards for pharmaceutical products moving in international commerce.

The INN system as it exists today was initiated in 1950 by the World Health Assembly resolution WHA3.11 and began operating in 1953, when the first list of International Nonproprietary Names for pharmaceutical substances was published.

So far, some 8500 names have been designated as INNs, and this number is growing every year by some 120 – 150 new INNs.

INNs are selected in close collaboration with national nomenclature commissions (e.g. BAN British Approved name, JAN Japanese Accepted Name, USAN United States Adopted Name etc.). Today, the INN Committee assumes the leading role in assigning generic names to drug substances. Instances where a national generic name for a new pharmaceutical substance is different from the INN are rare exceptions.

As unique names, INNs have to be distinctive in sound and spelling, and should not be liable to confusion with other names in common use (e.g. trade marks). To make INNs universally available they are formally placed by WHO in the public domain, hence their designation as “nonproprietary”. They can be used without any restriction whatsoever to identify pharmaceutical substances. The clear depiction of INNs on labels assures that prescribers and users alike can easily identify the nature of the pharmacologically active substance in a brand product. The use of INNs is already common in research and clinical documentation, while the importance of the Programme is growing further due to the expanding use of generic names for pharmaceutical products.

15 November 2011