International Nonproprietary Names
for Pharmaceutical Substances

In accordance with article 3 of the Procedure for the Selection of Recommended International Nonproprietary Names for Pharmaceutical Substances, notice is hereby given that the following names are under consideration by the World Health Organization as Proposed International Nonproprietary Names.

Comments on, or formal objections to, the proposed names may be forwarded by any person to the Pharmaceuticals unit of the World Health Organization within four months of the date of their publication in WHO Drug Information, e.g., for List 59 Prop. INN not later than 31 December 1988.

The inclusion of a name in the lists of proposed international nonproprietary names does not imply any recommendation for the use of the substance in medicine or pharmacy.

Action and Use
The statements in italics indicating the action and use are based largely on information supplied by the manufacturer. The information is meant to provide an indication of the potential use of new substances at the time they are accorded proposed INNs. WHO is not in a position either to uphold these statements or to comment on the efficacy of the action claimed. Because of their provisional nature these descriptors will not be included in the Cumulative Lists of INNs.

Proposed International Nonproprietary Names (Prop. INN): List 59

Comprehensive information on the INN programme can be found in WHO Technical Report Series, No. 581, 1975 (Nonproprietary Names for Pharmaceutical Substances. Twentieth Report of the WHO Expert Committee), ISBN 92 4 120081 4 (price $12.50); an account of this publication will be found in Annex 2 of the present List. All names from Lists 1-47 of Proposed International Nonproprietary Names, together with a molecular formula index, will be found in International Nonproprietary Names (INN) for Pharmaceutical Substances, Cumulative List No 6, 1982, World Health Organization, Geneva (ISBN 92 4 056013 0) (price $6.50). This publication consists, in the main, of a computer printout which groups together all the proposed and recommended international nonproprietary names (INNs) in Latin, English, French, Russian, and Spanish—published up to April 1982. The printout also indicates in which of the 47 individual lists of proposed names and 21 lists of recommended names each INN was originally published, and gives references to national nonproprietary names, pharmacopoeia monographs, and other sources. In addition, the list contains molecular formulae and Chemical Abstracts Service registry numbers. For easy reference, national nonproprietary names that either from INN, molecular formulae, and Chemical Abstracts Service registry numbers are indexed in a series of annexes. A final annex describes the procedure for selecting recommended INN and outlines the general principles to be followed in deviating these names. All the textual material published in this volume appears in both English and French.

These publications may be obtained, direct or through bookdealers, from the sales agents listed on the back cover of WHO Drug Information. Orders from countries where sales agents have not yet been appointed may be addressed to, World Health Organization, Distribution and Sales Service, 1211 Geneva 27, Switzerland.

2 Other lists of proposed and recommended international nonproprietary names can be found in Cumulative List No. 6, 1982.
Proposed International Nonproprietary Name (Latin, English) | Chemical Name or Description, Molecular and Graphic Formulae | Chemical Abstracts Service (CAS) Registry Number | Action and use
--- | --- | --- | ---
acidum butedronicum | (diphosphonomethyl)succinic acid | C₆H₁₂O₆P₂ | 51395-42-7 | bone imaging agent
acidum gadotericum | hydrogen [1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetato(4-)]-gadolinate(1-) | C₇₂H₁₁₂Nd₂O₃₆ | 72573-82-1 | paramagnetic contrast medium
acidum pamidronicum | (3-amino-1-hydroxypropyldene)phosphonic acid | C₂₁H₁₄NO₄P₂ | 40391-99-9 | inhibitor of tumor-induced hypercalcaemia
affadexum | α-cyclodextrin | C₃₅H₆₈O₃₅ | 10016-20-3
altiplasum | plasminogen activator (human tissue-type 2-chain form protein moiety) | C₇₃H₁₄N₁₂O₄₅S₁₅ | 105857-23-6
ambaslium | 3-(p-aminobenzoyl)-7-benzyl-3,7-diazabicyclo[3.3.1]nonane | C₁₂H₁₃N₂O | 83991-25-7 | antidysrhythmic
Proposed International Nonproprietary Name (Latin, English) Chemical Name or Description, Molecular and Graphic Formulæ Chemical Abstracts Service (CAS) registry number Action and use

aminoacida amino acids see general statement on nomenclature of amino acids under amendments

anistreplasum anistreplase aniscylated (human) lys-plasminogen streptokinase activator complex (1:1) 81669-57-0

apracionidinum apracionidine 2-[(4-amino-2,6-dichlorophenyl)imino]imidazolidine C₇H₆Cl₂N₂ 66711-21-5 α₂-adrenoreceptor agonist

arromidinum arromidine (±)-1-[3-(p-fluorophenyl)-3-(2-pyridyl)propyl]-3-(3-imidazol-4-ylpropyl)-guanidine C₉H₁₁FN₂ 106669-71-0 histamine H₂-agonist

beraprostum beraprost (±)-(E)-2R,3R,5S,8bS)-2,3,3a,8b-tetrahydro-2-hydroxy-1-[(E)-(3S,5R)-3-hydroxy-4-methyl-1-oxa-6-ynyl]-1H-cyclopenta[2]benzofuran-5-carboxylic acid C₁₉H₁₈O₅ 88430-50-6 platelet aggregation inhibitor, vasodilator

brivudinum brivudine (E)-5-(2-bromovinyl)-2'-deoxyuridine C₁₇H₁₇BrN₃O₉ 69304-47-8 antiviral
Proposed International
Nonproprietary Name (Latin, English)

<table>
<thead>
<tr>
<th>Chemical Name or Description, Molecular and Graphic Formulae</th>
<th>Chemical Abstracts Service (CAS) registry number</th>
<th>Action and use</th>
</tr>
</thead>
<tbody>
<tr>
<td>cefcaneum cefcanel</td>
<td>(6R,7R)-7-[(R)-mandelamido]-3-[[5-methyl-1,3,4-thiadiazol-2-yl]thio]methyl]-8-oxo-5-thia-1-azabicyclo[4.2.0]oct-2-en-2-carboxylic acid</td>
<td>C_{19}H_{21}N_{2}O_{6}S_{2} 41956-86-7 antibiotic</td>
</tr>
<tr>
<td>cefcaneum daloxatum cefcanel daloxate</td>
<td>2,3-dihydroxy-2-butenyl (6R,7R)-7-[(R)-mandelamido]-3-[[5-methyl-1,3,4-thiadiazol-2-yl]thio]methyl]-8-oxo-5-thia-1-azabicyclo[4.2.0]oct-2-en-2-carboxylate, cyclic 2,3-carbonate, ester with L-alanine</td>
<td>C_{25}H_{32}N_{2}O_{4}S_{3} 97279-40-6 antibiotic</td>
</tr>
<tr>
<td>cefquinomum cefquinone</td>
<td>1-[[6R,7R]-7-[2-(2-amino-4-thiazoyl)]glyoxylamido]-2-carboxy-8-oxo-5-thia-1-azabicyclo[4.2.0]oct-2-en-3-yl]methyl]-5,6,7,8-tetrahydroquinolinium hydroxide, inner salt, 7-[(2)-[O-methylxime)</td>
<td>C_{25}H_{32}N_{2}O_{4}S_{3} 84957-30-2 antibiotic</td>
</tr>
<tr>
<td>cisconazolum cisconazole</td>
<td>(±)-cis-4-[[3-(2,6-difluorobenzyl)oxy]-5-fluoro-2,3-dihydrobenzo[b]thien-2-yl]methyl]imidazole</td>
<td>C_{16}H_{16}F_{2}N_{2}OS 104456-79-3 antifungal</td>
</tr>
<tr>
<td>clarithromycinum clarithromycin</td>
<td>6-O-methylerythromycin</td>
<td>C_{32}H_{43}NO_{13} 81103-11-9 antibiotic</td>
</tr>
</tbody>
</table>
Proposed International Nonproprietary Name (Latin, English)  Chemical Name or Description, Molecular and Graphic Formulae Chemical Abstracts Service (CAS) registry number 

**colestololum**

**colestolone**

3β-hydroxy-5α-cholest-8(14)-en-15-one  
C₂₃H₃₆O₃  50673-97-7  hypolipidaemic

![Chemical Structure of Colestolone]

**dexmedetomidinium**

**dexmedetomidine**

(+)-4-[(R)-α,2,3-trimethylbenzyl]imidazole  
C₂₅H₂₃N₂  113775-47-6  α₂-adrenoceptor agonist

![Chemical Structure of Dexmedetomidine]

**docarpaminum**

**docarpamine**

(−)-(S)-2-acetamido-N-(3,4-dihydroxyphenethyl)-4-(methylthio)butyramide bis(ethyl carbonate) (ester)  
C₂₁H₂₅N₂O₄S  74639-40-0  dopamine prodruk

![Chemical Structure of Docarpamine]

**dopropidium**

**dopropidil**

1-[(1-isobutoxyethyl)-2-[(1-(propynyl)cyclohexyl)oxyethyl]pyrroldine  
C₂₆H₃₆NO₃  79700-81-1  antianginal, anti-ischaemic

![Chemical Structure of Dopropidil]

**dumorelinum**

**dumorelin**

27-L-tyrosine-44a-glycinegrowth hormone-releasing factor (human)  
C₂₁₁H₃₆N₁₂O₁₈S  105955-58-1

![Chemical Structure of Dumorelin]
<table>
<thead>
<tr>
<th>Proposed International Chemical Name or Description, Molecular and Graphic Formulae</th>
<th>Nonproprietary Name (Latin, English)</th>
<th>Chemical Abstracts Service (CAS) registry number</th>
<th>Action and use</th>
</tr>
</thead>
<tbody>
<tr>
<td>choline hydroxide, (±)-2-methoxy-3-(octadecyloxy)propyl hydrogen phosphate, inner salt or 2-O-methyl-1-O-octadecyl-rac-glycero-3-phosphocholine</td>
<td>edelfosinum</td>
<td>C&lt;sub&gt;21&lt;/sub&gt;H&lt;sub&gt;48&lt;/sub&gt;N&lt;sub&gt;2&lt;/sub&gt;O&lt;sub&gt;7&lt;/sub&gt;</td>
<td>70641-51-9</td>
</tr>
<tr>
<td>(±)-2-(2-ethyl-2,3-dihydro-2-benzofuranyl)-2-imidazoline</td>
<td>edelfosine</td>
<td>C&lt;sub&gt;20&lt;/sub&gt;H&lt;sub&gt;18&lt;/sub&gt;N&lt;sub&gt;2&lt;/sub&gt;O</td>
<td>89197-32-0</td>
</tr>
<tr>
<td>isopropyl (−)-(S)-4-(2,3-dichlorophenyl)-1,4-dihydro-2,6-dimethyl-5-(1,3,4-oxadiazol-2-yl)nicotinate</td>
<td>efaroxanum</td>
<td>C&lt;sub&gt;25&lt;/sub&gt;H&lt;sub&gt;20&lt;/sub&gt;N&lt;sub&gt;2&lt;/sub&gt;O&lt;sub&gt;3&lt;/sub&gt;Cl</td>
<td>103946-15-2</td>
</tr>
<tr>
<td>1-(2-ethoxyethyl)-2-(hexahydro-4-methyl-1H-1,4-diazepin-1-yl)benzimidazole</td>
<td>efinadipinum</td>
<td>C&lt;sub&gt;17&lt;/sub&gt;H&lt;sub&gt;22&lt;/sub&gt;N&lt;sub&gt;2&lt;/sub&gt;O</td>
<td>67233-61-2</td>
</tr>
<tr>
<td>4,5,6,7-tetrahydro-6-(methylamino)benzothiazole</td>
<td>etramine</td>
<td>C&lt;sub&gt;9&lt;/sub&gt;H&lt;sub&gt;9&lt;/sub&gt;N&lt;sub&gt;2&lt;/sub&gt;S</td>
<td>70550-58-8</td>
</tr>
</tbody>
</table>
**Proposed International Nonproprietary Name (Latin, English)**

**Chemical Name or Description, Molecular and Graphic Formulae**

**Chemical Abstracts Service (CAS) registry number**

**Action and use**

**Fracitabinum**

**Fracitabine**

1-(2-deoxy-2-fluoro-β-D-arabinofuranosyl)-5-iodocytosine

C₉H₁₈FIN₅O₇

68123-90-6  

**Antiviral**

**Flerobutanol**

**Flerobuterol**

α-[(tert-butylamino)methyl]-o-fluorobenzyl alcohol

C₁₂H₁₄FN₅O  

82101-10-8  

β-adrenoceptor agonist

**Fronedilium**

**Fronedipil**

1-[1-(isobutoxymethyl)-2-[(1-methyl-1-phenyl-2-propynyl)oxy]ethyl]pyrrolidine

C₁₃H₂₁NO₅  

79700-63-3  

Antidysrhythmic, anti-ischaeemic

**Oxentilenium**

**Oxentilin**

[[[2,6-diethyl-3-iodophenyl]carbamoyl][methyl]imino]diazetic acid

C₈H₁₝IN₅O₅  

106719-74-8  

Diagnostic aid

**Gapromidinum**

**Gapromidine**

1-[3-imidazol-4-ylpropyl]-3-[2-(2-pyridylamino)ethyl]guanidine

C₁₉H₂₆N₇  

106686-40-2  

Histamine H₂-agonist
<table>
<thead>
<tr>
<th><strong>Proposed International</strong></th>
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<th><strong>Chemical Abstracts Service (CAS) registry number</strong></th>
<th><strong>Action and use</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>granisetronum</td>
<td>1-methyl-N-[(endo)-9-methyl-9-azabicyclo[3.3.1]non-3-yl]-1H-indazole-3-carboxamide</td>
<td>109989-09-0</td>
<td>serotonin antagonist</td>
</tr>
<tr>
<td>granisetron</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>imirestatum</td>
<td>2,7-difluorospiro[fluorene-9,4′-imidazolidine]-2′,5′-dione</td>
<td>88381-50-4</td>
<td>aldose reductase inhibitor</td>
</tr>
<tr>
<td>imirestat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>inaperisonum</td>
<td>(±)-4′-ethyl-2-methyl-3-(1-pyrrolidinyl)propiophenone</td>
<td>99323-21-4</td>
<td>centrally acting muscle relaxant</td>
</tr>
<tr>
<td>inaperisone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ioxilanum</td>
<td>(N)-(2,3-dihydroxypropyl)-5-[(N)-(2,3-dihydroxypropyl)acetamido]-(N)′-(2-hydroxy-ethyl)-2,4,6-tridoisophthalamide</td>
<td>107773-72-8</td>
<td>contrast medium</td>
</tr>
<tr>
<td>ioxilan</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Proposed International**

**Nonproprietary Name (Latin, English)**

<table>
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<tr>
<th>Name</th>
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<th>CAS registry number</th>
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</tr>
</thead>
<tbody>
<tr>
<td>isbogrelum</td>
<td>(E)-7-phenyl-7-(3-pyridyl)-6-heptenoic acid</td>
<td>C_{17}H_{17}NO_5</td>
<td>thromboxane A_2-synthetase inhibitor</td>
</tr>
<tr>
<td>isbogrel</td>
<td>C_{17}H_{17}NO_5</td>
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</tr>
<tr>
<td>lornoxicamum</td>
<td>6-chloro-4-hydroxy-2-methyl-N-2-pyridyl-2H-thieno[2,3-e]-1,2-thiazine-3-carboxamide 1,1-dioxide</td>
<td>C_{17}H_{17}ClN_2O_5</td>
<td>nonsteroidal anti-inflammatory</td>
</tr>
<tr>
<td>lornoxicam</td>
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<td></td>
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<tr>
<td>manidipinum</td>
<td>2-[4-[(4-diphenylmethyl)-1-piperazinyl]ethyl methyl (E)-1,4-dihydro-2,6-dimethyl-4-(m-nitrophenyl)-3,5-pyridinedicarboxylate</td>
<td>C_{17}H_{17}NO_5</td>
<td>Calcium antagonist</td>
</tr>
<tr>
<td>manidine</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>6300</td>
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</tr>
<tr>
<td>muroderminum</td>
<td>urogastrone (mouse salivary gland) or epidermal growth factor (mouse salivary gland)</td>
<td>C_{17}H_{17}NO_5</td>
<td></td>
</tr>
<tr>
<td>&quot;murodermin&quot;</td>
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<tr>
<td>muromonab-CD3</td>
<td>A biochemically purified IgG_\alpha immunoglobulin consisting of a heavy chain of approx. 50,000 daltons and a light chain of approx. 25,000 daltons. It is manufactured by a process involving the fusion of mouse myeloma cells to lymphocytes from immunized animals to produce a hybridoma which secretes antigen-specific antibodies to the T3 antigen of human T-lymphocytes.</td>
<td>C_{17}H_{17}NO_5</td>
<td>immunomodulator</td>
</tr>
<tr>
<td>muromonab-CD3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed International Nonproprietary Name (Latin, English)</td>
<td>Chemical Name or Description, Molecular and Graphic Formulae</td>
<td>Chemical Abstracts Service (CAS) registry number</td>
<td>Action and use</td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
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<td>---------------</td>
</tr>
<tr>
<td>nebracetanum/nebracetam</td>
<td>(±)-4-(aminomethyl)-1-benzyl-2-pyrrolidinone</td>
<td>97205-34-0</td>
<td>nootropic agent</td>
</tr>
<tr>
<td></td>
<td><img src="image1" alt="Chemical Structure" /></td>
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</tr>
<tr>
<td></td>
<td><img src="image2" alt="Chemical Structure" /></td>
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<td></td>
</tr>
<tr>
<td>noberastinum/noberastine</td>
<td>3-(5-methylfurfuryl)-2-(4-piperidylamino)-3H-imidazo[4,5-b]pyridine</td>
<td>110589-56-2</td>
<td>histamine H₄-antagonist</td>
</tr>
<tr>
<td></td>
<td><img src="image3" alt="Chemical Structure" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>nuvenzepinum/nuvenzepine</td>
<td>6,11-dihydro-11-(1-methylisonippecotyol)-5H-pyrido[2,3-b][1,5]benzodiazepine-5-one</td>
<td>96487-37-5</td>
<td>antiulcer, gastric antisecretory</td>
</tr>
<tr>
<td></td>
<td><img src="image4" alt="Chemical Structure" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ondansetronum/ondansetron</td>
<td>(±)-2,3-dihydro-9-methyl-3-[2-methylimidazol-1-yl)methyl]carbazol-4(1H)-one</td>
<td>99614-02-5</td>
<td>serotonin antagonist</td>
</tr>
<tr>
<td></td>
<td><img src="image5" alt="Chemical Structure" /></td>
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<td></td>
</tr>
<tr>
<td><strong>Proposed International</strong></td>
<td><strong>Chemical Name or Description, Molecular and Graphic Formulae</strong></td>
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<tr>
<td>Nonproprietary-Name (Latin, English)</td>
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<td></td>
</tr>
<tr>
<td>Action and use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>pentisomidum</em></td>
<td><em>pentisomide</em></td>
<td>(\frac{\pm}{\pm})-(\alpha)-[2-(diisopropylamino)ethyl]-(\alpha)-isobutyl-2-pyridineacetamide</td>
<td>(\text{C}<em>{14}\text{H}</em>{22}\text{N}_{2}\text{O})</td>
</tr>
<tr>
<td><em>phenylpropanolaminum</em></td>
<td><em>phenylpropanolamine</em></td>
<td>(\pm)-norephedrine</td>
<td>(\text{C}<em>{11}\text{H}</em>{15}\text{NO})</td>
</tr>
<tr>
<td><em>piroxantronum</em></td>
<td><em>piroxantrone</em></td>
<td>(5)-[(3)-aminopropyl]amino]-7,10-dihydroxy-2-[(2)-[(2)-hydroxyethyl]amino]-ethyl]anthra[1,9-cd]pyrrolo[2,3-b]pyrrrole-6(2H)-one</td>
<td>(\text{C}<em>{21}\text{H}</em>{22}\text{N}<em>{2}\text{O}</em>{4})</td>
</tr>
<tr>
<td><em>prifelonom</em></td>
<td><em>prifelone</em></td>
<td>3,5-di-tert-butyl-4-hydroxyphenyl 2-thienyl ketone</td>
<td>(\text{C}<em>{20}\text{H}</em>{24}\text{O}_{3})</td>
</tr>
<tr>
<td><em>ridogrelum</em></td>
<td><em>ridogrel</em></td>
<td>(\pm)-[(\alpha)-3-pyridyl-(m)-(trifluoromethyl)benzylidene]amino(\omega)valeric acid</td>
<td>(\text{C}<em>{14}\text{H}</em>{13}\text{F}<em>{3}\text{N}</em>{2}\text{O}_{3})</td>
</tr>
<tr>
<td><em>rosterelonum</em></td>
<td><em>rosterelone</em></td>
<td>(17\beta)-hydroxy-1(\alpha)-methyl-17-propyl-5(\alpha)-androstan-3-one</td>
<td>(\text{C}<em>{28}\text{H}</em>{34}\text{O}_{2})</td>
</tr>
<tr>
<td>Proposed International</td>
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<td>Chemical Abstracts Service (CAS) registry number</td>
<td>Action and use</td>
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<td>-----------------------------------------------</td>
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</tr>
<tr>
<td><em>roxindolum</em></td>
<td>3-(4-(3,5-dihydro-4-phenyl-1H-pyridyl)butyl)indol-5-ol</td>
<td>C_{25}H_{26}N_{2}O</td>
<td>presynaptic dopamine agonist</td>
</tr>
<tr>
<td><em>roxindole</em></td>
<td><img src="image1" alt="Chemical Structure" /></td>
<td>112192-04-6</td>
<td></td>
</tr>
</tbody>
</table>
| *saperconazolum*                      | (±)-1-sec-butyl-4-[p-[4-[[2R*,4R*]-2-(2,4-difluorophenyl)-2-(1H-1,2,4-
|                                       | triazol-1-ylmethyl]-1,3-dioxolan-4-yl]methoxy]phenyl]-1-piperazinyl]phenyl]-
|                                       | di-1,2,4-triazolin-5-one                                      | C_{13}H_{12}F_{2}N_{4}O_{4}              | antifungal     |
| *saperconazole*                       | ![Chemical Structure](image2)                                 | 110688-57-3                                  |                |
| *sarmazenium*                         | ethyl 7-chloro-5,6-dihydro-5-methyl-6-oxo-4H-imidazo-
|                                       | [1,5-a][1,4]benzodiazepine-3-carboxylate                     | C_{13}H_{12}ClN_{2}O_{3}              | benzodiazepine antagonist |
| *sarmazenil*                          | ![Chemical Structure](image3)                                 | 78771-13-6                                   |                |
| *sitaliconum*                         | (±)-2-chloro-4'-hydroxy-5-(2-hydroxy-1-methyl-5-oxo-2-pyrolidinyl)-3',5'-
<p>|                                       | diisopropylbenzenesulfonamide                              | C_{24}H_{25}ClN_{3}O_{7}S             | diuretic, hypolipidaemic |
| <em>sitalidone</em>                          | <img src="image4" alt="Chemical Structure" />                                 | 108694-39-9                                   |                |
| <em>sumatriptanum</em>                       | 3-[2-(dimethylamino)ethyl]-N-methylindole-5-methanesulfonamide | C_{24}H_{26}N_{2}O_{5}S                    | serotonin agonist |
| <em>sumatriptan</em>                         | <img src="image5" alt="Chemical Structure" />                                 | 103628-46-2                                   |                |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Chemical Name or Description, Molecular and Graphic Formulae</th>
<th>CAS Registry Number</th>
<th>Action and Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tazanolastum</td>
<td>Butyl 3′-(1H-tetrazol-5-yl)oxanilate</td>
<td>C&lt;sub&gt;13&lt;/sub&gt;H&lt;sub&gt;18&lt;/sub&gt;N&lt;sub&gt;4&lt;/sub&gt;O&lt;sub&gt;3&lt;/sub&gt;</td>
<td>Antiallergic</td>
</tr>
<tr>
<td>Tazanolast</td>
<td></td>
<td>82989-25-1</td>
<td></td>
</tr>
<tr>
<td>Technetium&lt;sup&gt;99m&lt;/sup&gt;Tc Sestamibi</td>
<td>Hexakis[2-methoxy-2-methylpropyl isocyanide]&lt;sup&gt;99m&lt;/sup&gt;Tc/technetium(1+)</td>
<td>C&lt;sub&gt;36&lt;/sub&gt;H&lt;sub&gt;40&lt;/sub&gt;N&lt;sub&gt;8&lt;/sub&gt;O&lt;sub&gt;3&lt;/sub&gt;Tc&lt;sup&gt;99m&lt;/sup&gt;Tc</td>
<td>Radioactive diagnostic agent</td>
</tr>
<tr>
<td>Tedisamilium</td>
<td>3′,7′-bis(cyclopropylmethyl)spiro[cyclopentane-1,9′-[3,7]diazabicyclo[3.3.1]nonane]</td>
<td>C&lt;sub&gt;24&lt;/sub&gt;H&lt;sub&gt;32&lt;/sub&gt;N&lt;sub&gt;2&lt;/sub&gt;</td>
<td>Anti-ischaemic</td>
</tr>
<tr>
<td>Tedisamill</td>
<td></td>
<td>99061-53-8</td>
<td></td>
</tr>
<tr>
<td>Troxolidium</td>
<td>2′-hydroxy-3′-propyl-4′-[4′-(1H-tetrazol-5-yl)butoxy]acetophenone</td>
<td>C&lt;sub&gt;24&lt;/sub&gt;H&lt;sub&gt;32&lt;/sub&gt;N&lt;sub&gt;2&lt;/sub&gt;O&lt;sub&gt;3&lt;/sub&gt;</td>
<td>Antiasmatic</td>
</tr>
<tr>
<td>Troxolamide</td>
<td>3-[[2.3-dihydroxy-1-(hydroxymethyl)propyl]carbamoyl]-2.5,5-tetramethyl-1-pyrrrolidinyl</td>
<td>C&lt;sub&gt;13&lt;/sub&gt;H&lt;sub&gt;23&lt;/sub&gt;N&lt;sub&gt;3&lt;/sub&gt;O&lt;sub&gt;5&lt;/sub&gt;</td>
<td>Paramagnetic contrast medium</td>
</tr>
<tr>
<td>Proprietary Name</td>
<td>Chemical Name or Description, Molecular and Graphic Formulae</td>
<td>Chemical Abstracts Service (CAS) registry number</td>
<td>Action and use</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>vinmeggallatum</td>
<td>17,18-didehydro-3α,16α-eburnamenine-14-methanol 3,4,5-trimethoxybenzoate (ester)</td>
<td>83482-77-3</td>
<td>antipsoriatic</td>
</tr>
<tr>
<td>vinmeggallate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>zardaverinum</td>
<td>6-(4-(difluoromethoxy)-3-methoxyphenyl)-3(2H)-pyridazinone</td>
<td>101975-10-4</td>
<td>bronchospasmolytic</td>
</tr>
<tr>
<td>zardaverine</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Names for Radicals and Groups

Some substances for which a proposed international non-proprietary name has been established may be used in the form of salts or esters. The radicals or groups involved may be of complex composition and it is then inconvenient to refer to them in systematic chemical nomenclature. Consequently, shorter nonproprietary names for some radicals and groups have been devised or selected, and they are suggested for use with the proposed international non-proprietary names.

digoliol

digool

\[ \text{2-(2-hydroxyethoxy)ethyl} \]
\[ \text{C}_2\text{H}_5\text{O}_2 \]
\[ \text{H} \overset{\text{C}}{\underset{\text{H}}{\text{-CH}}\text{-CH}_2\text{-CH}_2\text{-OH}} \]

AMENDMENTS TO PREVIOUS LISTS

Nomenclature of aminoacids:

During the Seventeenth Consultation on INNs held in Geneva from 29 April to 1 May 1987 the following was agreed:

Names for the \( \alpha \)-form should be the names of the aminoacids without a prefix as is present practice in INNs. When there is a need to name the \( \alpha \)- and \( \beta \)-forms the INNs of the respective aminoacids should be prefixed with \( \alpha \)- and \( \beta \)- respectively. This approach is in agreement with established IUPAC practices in structural formulae for aminoacids where in the abbreviations Arg, Lys etc. the configuration is not indicated for the usual \( \alpha \)-form but only when the aminoacid is in the \( \beta \)-form and then it is indicated as \( \beta \)-.


Proposed International Nonproprietary Names (Prop. INN): List 1

p. 299  acidum glutamicum
        glutamic acid
        replace the chemical name by the following:
        \( \alpha \)-glutamic acid


Proposed International Nonproprietary Names (Prop. INN): List 4

p. 32  methioninum
        methionine
        replace the chemical name by the following:
        \( \beta \)-methionine

In Cumulative List No. 6 replace CAS Registry number by: 63-88-3
WHO Chronicle, Vol. 17, No. 10, 1963

Proposed International Nonproprietary Names (Prop. INN): List 13

p. 394  levoglutamidum
levoglutamid
replace the chemical name by the following:
\( \gamma \)-glutamine

WHO Chronicle, Vol. 18, No. 11, 1964

Proposed International Nonproprietary Names (Prop. INN): List 14

p. 433  acidum asparticum
aspartic acid
replace the chemical name by the following:
\( \gamma \)-aspartic acid

Cumulative List No. 3, 1971

International Nonproprietary Names (INN) for Pharmaceutical Substances

p. 17  aprotininum
aprotinin
replace the chemical name and the molecular formula by the following:
\[ \text{Arg-Pro-Asp-Phe-HCys-Leu-Glu-Pro-Pro-Tyr-Thr-Gly-Pro-HCys-Lys-Ala-Arg-}
\text{Ile-ile-Arg-Tyr-Phe-Tyr-Asn-Ala-Lys-Ala-Gly-Leu-HCys-Gln-Thr-Phe-Val-Tyr-}
\text{Arg-Thr-HCys-Gly-Gly-Ala cyclic (5–59), (14–36), (30–51)-tra(disulfide)}
\]  

p. 117  quinbolonum
quinbolone
replace the chemical name by the following:
17\( \beta \)-(1-cyclopenten-1-yloxy)androsta-1,4-dien-3-one

WHO Chronicle, Supplement to Vol. 33, No. 9, 1979

Proposed International Nonproprietary Names (Prop. INN): List 42

p. 6  cefizoximum
cefizoxime
replace the graphic formula by the following:
Proposed International Nonproprietary Names (Prop. INN): List 46

p. 3  avilamycin 

replace the chemical name and the graphic formula by the following:

Consists mainly of avilamycin A or O-((R)-4-C-acetyl-6-deoxy-2,3-O-methyleneg-galactopyranosylidene-(1→3)-2-C-(2-methyl-1-oxopropyl)-α-L-talo-
pyranosyl O-2,6-dideoxy-4-O-(3,5-dichloro-4-hydroxy-2-methoxy-6-methyl-
benzoyl)-β-D-arabino-hexopyranosyl-(1→4)-O-2,6-dideoxy-α-arabino-hexo-
yranosylidene-(1→3)-O-6-deoxy-3-C-methyl-β-D-arabino-hexopyranos-
yl-(1→3)-O-6-deoxy-4-O-methyl-β-D-galactopyranosyl-(1→4)-2,8-di-O-methyl-
β-D-mannopyranoside

major component A

minor components

\[
\begin{align*}
R & = \text{R} + \text{R}' \\
\text{B} & = \text{CO-CH}_3 \\
\text{C} & = \text{CO-CH(CH}_3}_2 \\
\text{D}_1 & = \text{H} \\
\text{D}_2 & = \text{CO-CH}_3 \\
\text{E} & = \text{H}
\end{align*}
\]

WHO Chronicle, Supplement to Vol. 39, May, 1985

Proposed International Nonproprietary Names (Prop. INN): List 53

p. 14  delete

midacipranum  insert

midacipran

\[
\begin{align*}
\text{H}_2\text{C-}-(\text{CH}_3)_2 & - \text{O-} \text{CH}_3 \\
\text{O} & = \text{C} - \text{NH} - \text{C} - \text{CH}_2 - \text{NH}_2 \\
\text{C} & = \text{O}
\end{align*}
\]

Proposed International Nonproprietary Names (Prop. INN): List 53

p. 14  delete

midacipranum  insert

midacipran

\[
\begin{align*}
\text{H}_2\text{C-}-(\text{CH}_3)_2 & - \text{COOH} \\
\text{O} & = \text{C} - \text{NH} - \text{C} - \text{H} \\
\text{C} & = \text{O}
\end{align*}
\]

replace the chemical name and the graphic formula by the following:

\[
\begin{align*}
\text{N}^2\text{-glycyl-} \gamma\text{-lysine}
\end{align*}
\]

\[
\begin{align*}
\text{H}_2\text{C-}-(\text{CH}_3)_2 & - \text{O-} \text{NH} - \text{C} - \text{NH} - \text{C} - \text{COOH} \\
\text{O} & = \text{C} - \text{NH} - \text{C} - \text{H} \\
\text{C} & = \text{O}
\end{align*}
\]
WHO Chronicle, Supplement to Vol. 40, No. 1, 1986

Proposed International Nonproprietary Names (Prop. INN): List 55

p. 11 pirarubicinum
pirarubicin

replace the chemical name and the graphic formula by the following:
(85,10S)-10-[[3-amino-2,3,6-trideoxy-4-O-(2H-tetrahydroy-2H-pyran-2-yl)-α-L-lyxo-
hexopyranosyl]oxy]-8-glycoloyl-7,5,9,10-tetrahydro-8,11-trihydroxy-1-
methoxy-5,12-naphthacenedione

WHO Chronicle, Supplement to Vol. 40, No. 5, 1986

Proposed International Nonproprietary Names (Prop. INN): List 56

p. 3 delete
bermastinum
bermastine

insert
barmastinum
barmastine

p. 6 ebratidum
ebiratide

replace the chemical name by
L-methionyl-L-glutamyl-L-histidyl-L-phenylalanyl-L-lysyl-N-(8-aminooctyl)-L-phenylalaninamide S,S-dioxide

p. 15 seganserinum
seganserin

replace the molecular formula by the following:
C₃₉H₆₂F₆N₁₃O₁₁

p. 16 somatropinum
somatropin

replace the molecular formula by the following:
C₃₁₇H₄₁₂N₂₁O₁₈S₂


Proposed International Nonproprietary Names (Prop. INN): List 57

p. 96 clopidogrelum
clopidogrel

replace the chemical name. CAS registry number and graphic formula by:
methyl (+)-(S)-α-(o-chlorophenyl)-6,7-dihydrothio[3,2-c]pyridine-5(4H)-acetate
113685-84-2

p. 97 dramedilolum
dramedilol

replace the graphical formula by the following:

Proposed International Nonproprietary Names (Prop. INN): List 58

p. 177 delete
bendacolium
bendacol

p. 178 delete
cliopaminum
cliopamine

p. 180 doropetidum
doropetide

insert
bendacalium
bendacal
cliopain
cliopamine

replace the graphic formula by the following:

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 in the selection of recommended international nonproprietary names for pharmaceutical substances, in accordance with the World Health Assembly resolution WHA5.11:

1. Proposals for recommended international nonproprietary names shall be submitted to the World Health Organization on the form provided therefor.

2. Such proposals shall be submitted by the Director-General of the World Health Organization to the members of the Expert Advisory Panel on the International Pharmacopoeia and Pharmaceutical Preparations designated for this purpose, for consideration in accordance with the "General principles for guidance in devising international Nonproprietary Names", appended 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.

3. Subsequent to the examination provided for in article 2, the Director-General of the World Health Organization shall give notice that a proposed international nonproprietary name is being considered.

A. Such notice shall be given by publication in the Chronicle of the World Health Organization and by letter to Member States and to national pharmacopoeia commissions or other bodies designated by Member States.

(i) Notice may also be sent to specific 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 a 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 the World Health Organization is acting and refer to these rules of procedure.

C. In forwarding the notice, the Director-General of the World Health Organization 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 the World Health Organization.

4. Comments on the proposed name may be forwarded by anyone to the World Health Organization within four months of the date of publication, under article 3, of the name in the *Chronicle of the World Health Organization*.

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 the *Chronicle of the World Health Organization*.

A. Such objection shall:
   (i) identify the person objecting;
   (ii) state his interest in the name;
   (iii) set forth the reasons for his objection to the name proposed.

   6. Where there is a formal objection under article 5, the World Health Organization 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 the World Health Organization of a substitutive name or names, a name shall not be selected by the World Health Organization as a recommended international nonproprietary name while there exists a formal objection thereto filed under article 5 which has not been withdrawn.

   7. Where no objection has been filed under article 5, or all objections previously filed have been withdrawn, the Director-General of the World Health Organization shall give notice in accordance with subsection A of article 3 that the name has been selected by the World Health Organization as a recommended international nonproprietary name.

   8. In forwarding a recommended international nonproprietary name to Member States under article 7, the Director-General of the World Health Organization 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, including prohibiting registration of the name as a trade-mark or trade-name.

*The title of this publication was changed to WHO Chronicle in January 1959. From 1967 onwards lists of INNs are published in WHO Drug Information.*

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**GENERAL PRINCIPLES FOR GUIDANCE IN DEVISING INTERNATIONAL NONPROPRIETARY NAMES FOR PHARMACEUTICAL SUBSTANCES**

1. International Nonproprietary Names (INN) should be distinctive in sound and spelling, and 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 INNs for related substances, belonging to the new group.

4. In devising INNs 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. INNs 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 active 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 aminosalt 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, "'t' 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 be shown by using a common stem. The following list contains examples of stems for groups of substances particularly for new groups. The choice between other stems in active use depends on whether a stem is shown without any hyphens it may be used anywhere in the name.

---

<table>
<thead>
<tr>
<th>Latin</th>
<th>English</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>-acum</td>
<td>-ac</td>
<td>anti-inflammatory agents of the ibufenac group</td>
</tr>
<tr>
<td>-actidum</td>
<td>-actide</td>
<td>synthetic polypeptides with a corticotrophin-like action</td>
</tr>
<tr>
<td>-adohum</td>
<td>-adol</td>
<td>analgesics</td>
</tr>
<tr>
<td>-astum</td>
<td>-ast</td>
<td>anti-asthmatic, anti-allergic substances not acting primarily as antihistaminics</td>
</tr>
<tr>
<td>-astinum</td>
<td>-astline</td>
<td>antihistaminics</td>
</tr>
<tr>
<td>-azeepamum</td>
<td>-azepam</td>
<td>substances of the diazepam group</td>
</tr>
<tr>
<td>-bactamum</td>
<td>-bactam</td>
<td>β-lactamase inhibitors</td>
</tr>
</tbody>
</table>
bol -buzone -buzone steroids, anabolic
-cain -cain anti-inflammatory analgesics of the phenylbutazone group
-cainum -cain antibiotics, derivatives of cephalosporanic acid
cel- cel- local anaesthetics
-cillin -cillin antibiotics, derivatives of S-aminopenicillanic acid
-conazole -conazole systemic antifungal agents of the miconazole group
corti -corti corticosteroids, except those of the prednisolone group
c spaghetti -spaghetti calcium antagonists of the nifedipine group
gast -gast substances of the cefibrate group
Gil -gil sulphonamide hypoglycemics
io -io iodine-containing contrast media
-lum -lum quaternary ammonium compounds
-metacin -metacin anti-inflammatory substances of the indometacin group
-myco -mycin antibiotics, produced by Streptomyces strains
-nidazone -nidazole antiprotozoal substances of the metronidazole group
-o-lol -o-lol β-adrenergic blocking agents
-oxacin -oxacin antibacterial agents of the naiidix acid group
-pride -pride sulphinide derivatives
-pril(atum) -pril(at) angiotensin-converting enzyme inhibitors
-profen -profen anti-inflammatory substances of the ibuprofen group
-rost -rost prostaglandins
-rol -rol hypophyseal hormone release-stimulating peptides
-terol -terol bronchodilators, phosphatidylamine derivatives
-tidine -tidine H₂-receptor antagonists
-tretaxone -tretaxone follic acid antagonists
-verine -verine spasmod Ticcs with a papaverine-like action
-vin -vin vinca type alkaloids

\[1 \text{ A more extensive listing of stems is contained in the working document Pharm S Nom 15 which is regularly updated and can be requested from Pharmaceticals, WHO, Geneva.}\]

Annex 2

NONPROPRIETARY NAMES FOR PHARMACEUTICAL SUBSTANCES:
TWENTIETH REPORT OF THE WHO EXPERT COMMITTEE

In its twentieth report\(^1\) 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 recent 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. Also reported is the intention to change the practice with regard to the nomenclature of individual members of polymeric series.

Other sections of the report concern instructions to be followed by bodies making application for international nonproprietary names, the availability of computer-printed cumulative lists of international nonproprietary names, information supplied by WHO Member States concerning their official use of national or international names for pharmaceutical products, and proposals relative to the withdrawal of international nonproprietary names allocated to substances that are no longer in use.

The official texts relating to the procedures for selecting, and general guidance for devising, international nonproprietary names are reproduced in two annexes to the report. Other annexes give examples of international nonproprietary names that incorporate selected stems, the most frequently used initial groups of letters in international nonproprietary names, a historical review of the programme of selecting international nonproprietary names, some useful literature references, and a model of the form to be used in all applications for international nonproprietary names.