

## **Comments by I.S.O.**

**on the**

### **Draft Report (as of 26. April 2002) of the Joint WHO/FAO Expert Consultation and Diet, Nutrition and the Prevention of Chronic Diseases (Geneva, 28. Jan. - 1. Feb. 2002)**

The International Sugar Organisation (I.S.O.) is an intergovernmental non-profit-organization and represents 61 countries worldwide, from Argentina to Zimbabwe, developing and developed countries. Members represent 61 percent of world consumption.

ISO welcomes the invitation to provide its expertise and comments to the draft report of the expert consultation on „diet, nutrition and the prevention of chronic diseases“. This comment concentrates on the science base of the suggested worldwide population nutrient intake goal for „free sugars“ and the corresponding background papers with focus on sugar-related issues.

#### **1. The concept of worldwide nutrient goals**

This Draft Report presents nutrition recommendations in the form of single and universal dietary nutrient goals prescriptive for the nutrition of the population worldwide. The impression is given that not adhering strictly to the upper nutrient limits posited will lead automatically to several chronic diseases considered (obesity, diabetes, cardiovascular diseases, cancer, dental diseases and osteoporosis). This impression exaggerates the influence of diet in these diseases and obfuscates the major influence of a number of other aetiological influences. This “one size fits all” approach also ignores the considerable variation in the importance of these different (dietary and non-dietary) factors in different individuals and population groups. In the past, the concept of prescriptive population targets for macronutrients was criticized for a number of valid reasons. Among these, are the fact that the human body is able to adapt to diets of widely different macronutrient composition, especially under conditions of energy balance.

The impression given in the Draft Report that morbidity and mortality from the seven non-communicable diseases selected would be dramatically reduced, and that health care costs would be correspondingly reduced, is not supported by the balance of evidence. This simplistic view has been proposed, and rejected, before. The WHO Technical Report 797 was published in 1990 and widely rejected. Among those repudiating this earlier Report were the FAO (EUR/ICP NUT 145; Annex 3). The arguments of FAO were “that different dietary habits exist between each country and many groups within countries. The differences between such groups, and particularly between developed and developing countries make it impossible to suggest any one valid set of numerical recommendations, including ranges of quantitative targets for various nutrients. The recommendation of quantitative nutrient targets in general international reports can cause serious nutritional, health and economic problems when such quantitative targets are taken as absolute by government authorities, and this has occurred in some countries. In addition, quantitative nutrient recommendations referring to foods or food components for which there is insufficient scientific evidence to support such recommendations can cause serious problems to the general and economic development of developing countries”.

How best to promote a balanced diet was the topic of a recent Joint FAO/WHO consultation on the “Preparation and Use of Food-Based Dietary Guidelines” (WHO Technical Report 880, published in 1998), which comprehensively addressed the scientific and practical issues involved in promoting a healthy eating pattern. This consultation also assessed the scientific basis for the relationship between diet, nutrition and health, including consideration of all aspects of the diet (energy, macronutrients and micronutrients) as well as different population subgroups. Strategies and tools to improve dietary

patterns, adaptable to different circumstances, were suggested. This Draft Report is, therefore, disingenuous when it states that previous FAO and WHO reports have provided “limited guidance on the meaning of a balanced diet”.

Other Consultation reports, e.g. “Fats and Oils in Human Nutrition” (FAO Food and Nutrition Paper 57; published in 1994) and “Carbohydrates in Human Nutrition” (FAO Food and Nutrition Paper 66; published in 1998) have also considered the impact of these macronutrients with respect to the prevention of chronic diseases. The conclusions of these reports are in contradiction to this Draft Report in that they put the proportions of macronutrient intakes into a realistic perspective, allowing far more flexibility in response to the dietary circumstances of the individual. Furthermore, the report “Carbohydrates in Human Nutrition” and the report on “Food-Based Dietary Guidelines” both specifically advised against setting a target to limit sugar intake.

## **2. The classification of sugars for health purposes**

The Draft Report discriminates in its dietary advice between “free sugars” and “other sugars”, requesting the limitation of “free sugars” intake to less than 10 energy % .

The Draft Report defines „free sugars” as “*all mono – and disaccharides added by manufacturer, cook or consumer plus sugars present in honey, syrups and fruit juices*” and “other sugars” as “*sugars naturally present in whole grain foods, whole fruit and vegetables, milk and milk products*” as suggested by the background paper on dental diseases (Annex 6, page 22; see also footnote 28 to Table 2 on page 21 as well as Annex 1). There is no scientific evidence that this categorization of sugars is of any value to public health.

This terminology contradicts other WHO consultations. The distinction into these two categories is not justified in the Draft Report’s discussion of either obesity or oral health as naturally occurring sugars are equally calorific and have similar influence on dental caries. The latter topic was the subject of a scientific review paper on diet and oral health presented at the Second World Dental Conference on Oral Health promotion organized by the World Dental Federation (FDI) in 1999 (König K.G.: Diet and oral health; Int. Dent. J.; 2000). It concluded that all sugars are potentially cariogenic and stated explicitly “it is not true that naturally present sugars in fruits or lactose in milk are noncariogenic.”

The Draft Report’s proposal that the intake of “free sugars” should be monitored is impractical and unnecessary. Sugars added, for example to fruit salads, could not be discriminated from those naturally present by analytical measures. Furthermore, the body cannot tell the difference between naturally occurring and added sugars because they are metabolised in the same way.

## **3. Nutrient recommendations for the prevention of excess weight gain and obesity (Chapter 4.1 and Annex 2)**

The Draft Report contains several misconceptions on the role of sugar in relation to weight gain and obesity that merit correction.

The scientific background paper on the “Prevention of excess weight gain and obesity” classifies refined sugar (sucrose) as “*often seen as being a cause of weight gain*”. This statement suggests a bias in the subsequent assessment of research reports on sucrose.

The general view of carbohydrates (including sugars) in relation to obesity has changed over the past few decades, among the research community, from being conducive to over-consumption and weight gain to being protective. This change has been ignored in the Draft Report. Research has consistently shown that high carbohydrate/ low fat diets influence energy balance (probably by reducing food intake through greater satiety effects, reducing energy density and displacing fat from the diet) and

thus help in body weight control. This applies to high carbohydrate diets, even those with higher than normal sugar contents.

The background paper seems to accept that high carbohydrate diets protect against weight gain. But it then asks the rhetorical question “whether the same association applies to diets high in sugar”. It fails to answer this question, despite the fact that there is ample evidence in the literature that high carbohydrate diets protect against weight gain, irrespective of their sugar content.

Current advice on body weight management is to reduce dietary fat in favour of a higher intake of carbohydrates. As total sugar intake is commonly inversely related to total fat intake, a higher sugar intake in low fat/high carbohydrate diets seems to be an acceptable option. This was the conclusion of an expert debate at the EURODIET conference in 2000 (James WPT: Carbohydrates; Public Health Nutrition 2001; 4: 402 – 405).

Thus the balance of research evidence on the relationship between sugars and body weight is in disagreement with the proposal in the Draft Report that “free sugars” should be restricted to avoid weight gain. The statement that “free sugars” content of the diet is an indicator for the energy density of the diet is demonstrably incorrect.

The Draft Report’s position on sugar and obesity is in stark contrast to the balance of the evidence and to the conclusions of other expert groups. The FAO/WHO joint expert consultation report **Carbohydrates in Human Nutrition** concluded “there is little direct evidence that obese individuals eat excessive quantities of sweet foods. Indeed, a number of studies show an inverse relationship between sugar consumption and overweight“. The FAO/WHO consultation report entitled *Preparation and Use of Food-Based Dietary Guidelines* concluded that there is no evidence that foods high in sugar contribute significant amounts of fat to the diet, although some foods are relatively high in fat and sugars”.

The further argument put forward in the background paper that sugar is used by food manufacturers as a fat replacer, and would thus lead to an (over)-compensation for the fat calories exchanged, seems to be of anecdotal origin. No evidence is put forward to substantiate this bizarre idea. The acceptable sweetness of a food item cannot be increased by adding more sugar, nor has sugar the specific properties to imitate the technological functionalities of fats in food manufacturing. The Draft Report also claims that fat-reduced foods often have a higher energy density as a result of their sugar content. Though couched in vague terms, this claim implies that the product will be higher in energy density than the normal (high fat) product. Since sugar has less than half the energy value per gram than fat, a product would need to contain over twice as much sugar as the fat replaced to achieve an increase in energy density. There are no examples of such foods on the market. Therefore the hypothesis that sugar, by replacing fats, lead to foods of higher energy density is both implausible and factually incorrect.

Sugar is a carbohydrate, contributing 4 kcal/g as all carbohydrates, irrespective of the molecular size. High carbohydrate diets – including sugar - are useful in weight management and the prevention of excess weight and obesity. The assumption that some selective food and drink items are the cause of the obesity epidemic is not proven. The report does not provide any scientific data to justify a separate nutrient goal for “free sugars” within the total carbohydrate goal of 55 – 75 energy % for weight management.

#### **4. Nutrient recommendations for the prevention of dental diseases** **(Chapter 4.5 and Annex 6 and Annex 1)**

In Chapter 4.5 of the Draft Report, on page 38, it is stated that “ dietary sugar is the main cause of tooth loss in dental caries” and “that dental caries is preventable by limiting the amount and frequency of consumption of free sugars”. These and other statements in Table 8 and in the background paper are in stark contrast to the international scientific consensus on the relationship between diet and dental caries and thus also conflict with the scientific evidence.

The Draft Report recommends a population target for a maximum intake of “free sugars” (<10 % of energy intake) in order to prevent dental diseases. This target ignores the clear evidence that all carbohydrate foods – whether cooked starches, sugars naturally present in foods or added - are potentially cariogenic. Sugars that are liberated from cooked or processed starches by salivary amylase can contribute to caries risk. It is universally acknowledged that the best measures to prevent caries are the regular removal of dental plaque with a toothbrush and the use of a fluoride toothpaste twice a day. These important public health approaches were not mentioned in the Draft Report.

Dental caries is recognized as an infectious, communicable disease with multifactorial aetiology. The main modifiable factor is the presence of carbohydrate-fermenting (acidogenic) bacteria in dental plaque. The bacterial fermentation products may lead to demineralisation of the tooth. Oral hygiene with regular removal of dental plaque by tooth brushing with a fluoride-containing toothpaste is recognised to be the most effective caries preventive measure. It helps to remove food debris and to minimize dental plaque; inhibits the metabolism of sugars to acids by acidogenic bacteria; while fluoride promotes the remineralization of the teeth. If oral hygiene habits with fluoride are practised, then current dietary habits are not a problem for caries. And where caries still occurs, it is predominantly lack of oral hygiene or lack of exposure to fluoride that is the issue (Carbohydrates in Human Nutrition, 1998; FAO). If dental plaque is present, virtually every eating occasion may lead to a pH-drop and an acidic attack on dental enamel.

Research has shown that it is not the amount of sugar consumed, but it is the frequency of eating occasions of fermentable carbohydrates. The major part of the mixed diet (more than 99 %) is swallowed as such and not in contact with oral bacteria. Only minute amounts are used by dental plaque bacteria. This demonstrates again, that not the amount ingested is of importance, but the food retained in the dentition and in dental plaque. As there are no significant selfcleansing mechanisms in the oral cavity for the sites at risk, the active removal of dental plaque bacteria is important. This is another prove that a quantitative nutrient target to limit “free sugars” intake to 6-10 energy % as a means to control dental caries although the diet should be rich in total carbohydrates (55- 75 % energy) and high in fruits and vegetables is not corroborated by dental research.

The FAO/WHO Consultation Carbohydrates in Nutrition called *„for a more rationale approach to the role of fermentable carbohydrates in dental caries.“* The report concluded that *“That a basic personal prevention package” of oral hygiene habits – cleaning with a toothbrush and using fluoride toothpaste – is probably sufficient to keep 75 per cent of adolescents caries free. In short, dental health problems do not require any dietary recommendations in addition to, or other than those required for maintenance of general health“* (FAO, 1998).

It is recommended that the conclusions reached by the Second World Conference on Oral Health Promotion of 1999 in London of the International Dental Federation (FDI) should be the basis for the oral health advice in the draft report (Int Dent.J. 2000; Volume 3; pp135 - 174). Such advice would also be consistent with the FAO/WHO Consultation on Carbohydrates and Human Nutrition, 66, 1998, which called *„for a more rationale approach to the role of fermentable carbohydrates in dental caries.“* The report concluded that *“if oral hygiene with a fluoride dentifrice is practised, dental health problems do not require any dietary recommendations in addition to, or other than those required for maintenance of general health.“*

## **5. Conclusion**

The Draft Report discriminates in its dietary advice between “free sugars” and “other sugars”, requesting the limitation of “free sugars” intake to less than 10 energy % .The Draft Report defines „free sugars” as *“all mono – and disaccharides added by manufacturer, cook or consumer to foods plus sugars present in honey, syrups and fruit juices”* and “other sugars” as *“sugars naturally present in whole grain foods, whole fruit and vegetables, milk and milk products”*. The distinction into these two categories is not justified in the Draft Report’s discussion of either obesity or oral health as

naturally occurring sugars are equally calorific and have similar influence on dental caries. This terminology contradicts other WHO consultations.

The Draft Report proposes to limit the intake of “free sugars” to less than 10 energy % based mainly on the argument to prevent obesity and to prevent dental caries. This recommendation for a population nutrient goal for “free sugars” is in contrast to scientific evidence and consensus statements of many health associations worldwide, which did not set a specific target to limit sugars intake. As there is no new evidence available to justify such a figure, the sugar target should be deleted from the WHO draft report.

Carbohydrates are a required component of a balanced diet. It is widely accepted that carbohydrates, including sugars, are useful components of the diet when weight gain is to be avoided.

Where adequate oral hygiene and fluoride are present daily, diet has become a lesser factor in caries prevention. Without sufficient fluoride and hygiene, diet becomes more important. Under these circumstances it is the frequency of consumption of all carbohydrate-containing foods and drinks that constitute the risk rather than the amount.

The main public health message of Table 2 is the recommendation to eat a high carbohydrate/ low-fat diet. There is no scientific justification to set a 10 % limit for sugars within the broad range for total carbohydrate intakes of 55-75 energy %.

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