

codex alimentarius commission



FOOD AND AGRICULTURE
ORGANIZATION
OF THE UNITED NATIONS

WORLD
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ORGANIZATION



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Agenda Item 10

CX/NFSDU 06/28/10

October 2006

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON NUTRITION AND FOODS FOR SPECIAL DIETARY USES

28th Session,

Sheraton Chiangmai Hotel, Chiang Mai, Thailand

DISCUSSION PAPER ON THE REVISION OF SECTION 3.4 "CARBOHYDRATES" OF THE CODEX STANDARD FOR PROCESSED CEREAL-BASED FOODS FOR INFANTS AND YOUNG CHILDREN

(Prepared by Thailand)

1. Background

1. The 27th session of CCNFSDU, the Committee agreed to forward the Draft Revised Standard for Processed Cereal-Based Foods for Infants and Young Children to Step 8 for adoption by the 29th Session of the Codex Alimentarius Commission. However, the Delegation of Norway, referring to the recommendations of the WHO Global Strategy for Diet, Physical Activity and Health (DPAS), proposed to reduce the level of added sugars in the Section 3.4 Carbohydrate in order to reduce the risks of obesity and adverse health effects in infants and young children. The Delegation of Thailand, supported by other delegations, proposed to limit the levels of sugars added to half of the drafted levels. Several delegations and observers supported the proposal to limit the intakes of sugars in view of the risks involved and indicated that they implemented such policies at the national level. Some delegations pointed out that a high intake of sugars would also develop a taste for sweet foods in children, which should be prevented by limiting sugar intake in cereal – based foods. The Committee agreed to retain the current provisions for carbohydrates and to consider more specifically the implementation of the Global Strategy (DPAS) as separate issue under Agenda item 10. The Delegation of Thailand expressed its reservation with this decision.

2. At the 29th session of CAC, the Delegation of Thailand referring to its comments in LIM 8, stated that it was necessary to limit the level of added free sugars in the draft Revised Standard to be less than 10% of total energy as recommended by the WHO/FAO Expert Consultation on Diet and Nutrition for the Prevention of Non-communicable Diseases and proposed to return the text to the CCNFSDU for further consideration of this issue. This view was supported by several delegations. In addition, the delegation of India proposed that the content of cereal in cereal based foods should be kept at 50% as the minimum, that the energy density of the cereal based foods for infants should be 4 -5 kcal/g and that the minimum protein content of cereal based foods for infants and children should be 15%. This view was supported by some delegations.

3. After some consideration, the Commission adopted the Draft Revised Standard for Process Cereal – Based Foods for Infants and Young Children at Step 8 as proposed in Appendix II of ALINORM 06/29/26. The Delegations of Thailand and India reserved their positions on this decision. The Commission agreed to request the CCNFSDU to evaluate the need for revising Section 3.2, 3.3 and 3.4

of the adopted standard in light of the recommendations of the WHO Global Strategy for Diet, Physical Activity and Health.

4. Thailand has prepared the discussion paper to request the 28th session of CCNFSDU to revise Section 3.4 of the adopted standard.

2. Rationales

5. Thailand considers that foods for infants and young children are very crucial contributing to their immediate and long term health. Since, a high intake of sugars enhances the development of sweet taste preference and dental caries in children, and provides excessive energy intake which may contribute to childhood obesity, therefore, the sugars intake in cereal-based foods should be limited.

2.1 Obesity and other ill health conditions

2.1.1. Obesity

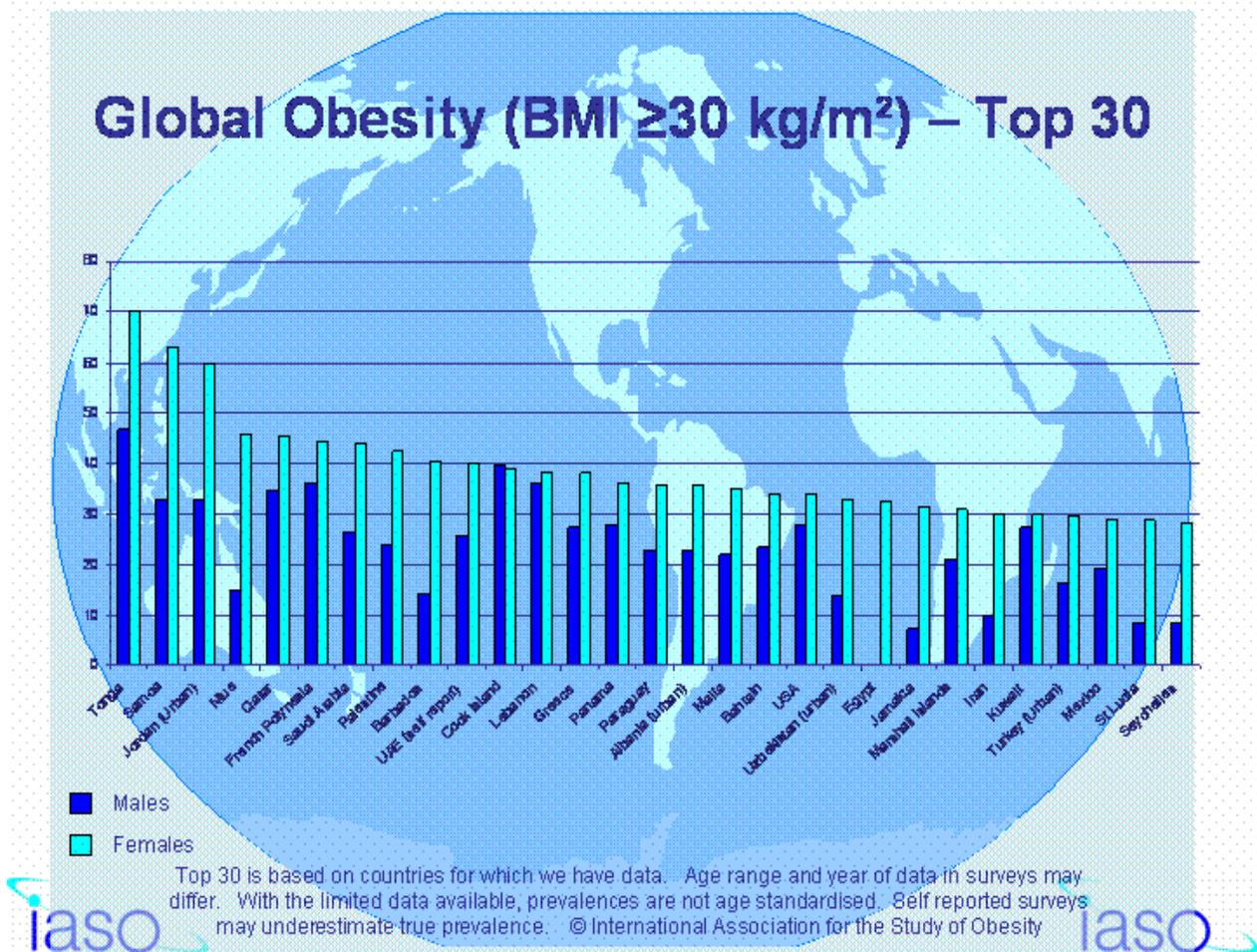
6. Obesity can be defined simply as the disease in which excess body fat has accumulated to such an extent that health may be adversely affected. However, the amount of excess fat, its distribution within the body, and the associated health consequences vary considerably between obese individuals.

7. It has been well documented that obesity in all age groups is one of the serious health problems around the world. Obesity is a major risk factor for ncdds such as niddm (non-insulin-dependent diabetes mellitus), cvd and cancer. Obesity has reached epidemic of proportions globally, with more than 1 billion adults overweight - at least 300 million of them clinically obese and 115 million persons in developing countries suffering from obesity related conditions. Obesity accounts for 2-6% of total health care costs in several developed countries; some estimates put the figure as high as 7%. The true costs are undoubtedly much greater as not all obesity-related conditions are included in the calculations.

8. Evidence is now emerging to suggest that the prevalence of overweight and obesity is increasing worldwide at an alarming rate. Both developed and developing countries are affected. Moreover, as the problem appears to be increasing rapidly in children as well as adults, the true health consequences may only become fully apparent in the future.

9. Childhood obesity is also already epidemic in some areas and is increasing in others. An estimated 22 million children under five are estimated to be overweight worldwide. In Thailand the prevalence of obesity in 6-to-12 year olds children rose from 12.2% to 15.6% in just two years.¹ It was estimated that the prevalence of obesity among preschool Thai children increased 3 times during 1991 - 1997. A cross sectional survey in elementary schools from the whole country showed that 13.6 % of the children were overweight.² Approximately 15% of Thai males and 27% of females age 30 years or older are either pre-obese or obese (BMI \geq 25 kg/m²). Ten percent of Thai population aged 35 years or older are diabetic (national sample, 2000), and 23% of this population group are hypertensive. (national sample, 1996-97)³

10. The following illustration shows the problem on global figure of obesity prevalence in adults selecting top 30 countries⁴.



11. Obesity is caused by a complex interaction between genetic predisposition and environmental trigger factors. However, the current epidemic of obesity showed that environmental facilitators such as food intake and energy expenditure are more important.⁵ A 19-month prospective study showed a clear relationship between the consumption of sugar-sweetened drinks and the development of obesity in children.⁶

12. Obesity presents numerous problems for the child. It takes a toll both in physical health and psychosocial adjustment. Childhood obesity is the leading cause of pediatric hypertension, is associated with Type II diabetes mellitus, increases the risk of coronary heart disease and increases stress on the weight-bearing joints.

2.1.2 Dental caries

13. The prevalence of dental caries in young children is high in Asian countries including Thailand. More than 60% of the 5-year-old children in these countries have dental caries. The Dental Health Division, Department of Health, reports the latest oral health survey in 2002, that 66.5% of the 3-year-old Thai children have dental caries. By the age of 5-6 year, the prevalence increased to 86%.⁷ The report in 2004 also showed that dental caries in 1 ½ year-old children was 16.2%. The increasing rate was high during 1-3 years of age.⁸

14. There are many risk factors for dental caries. However, the local effect of dietary sugars has a fundamental role in the disease. Dental caries is caused by interaction between oral bacteria, fermentable carbohydrates and susceptible tooth surface.⁹ The recognition that sugars have an etiological role in dental caries has been for long time. The 1945-1953-Vipeholm study investigated the

association between sugar consumption and dental caries. It is concluded that consumption of sugary food and drinks both between meals and at meals is associated with a large caries increment.¹⁰

2.2 Development of sweet taste preference in children

15. Children love sweet and dislike bitter tastes. A sensory pleasure response to sweet taste is present at birth and children tend to select those foods that are both familiar and palatable. The taste buds make their first appearance around 7th or 8th week of gestation. The human fetus is actively swallowing amniotic fluid, and has been exposed to variety of substances including glucose and fructose. Thus, preference to sweet taste is evidenced prior to birth. Food choices and eating habits are influenced strongly by taste of foods, palatability and satiety and hedonic component also are involved. Energy-dense foods that combine sugar and fat are the most palatable of all. Innate taste preferences for sweetness and fat are thought to be one reason for human desire to consume sweet and high-fat foods and for the growing consumption of fats and sugars.

16. Infants from birth to 3 years old are the most sensitive period for the development of chemoreceptor of taste buds. This age group of children is also a golden period for them to set up their behavior such as eating especially sweet preference. Two factors of hedonic response in human are palatable and satiable food. Most palatable food is high energy dense food (fatty and sweet food) while satiable food is low energy dense such as high fiber diet. Palatable food is more prefer than satiable food.

17. In conclusion, in addition to breast milk, foods and drinks for children from six month to three years of age would be crucial for development of taste preference. The sugars with sweetness higher than lactose should be of limited use in their foods.

18. In this context, Thailand had taken a step to limit the use of sugars and other food ingredients with high sweetness in infant formula and follow on formula.¹¹ In the present notification, it is stated clearly that the products shall not be added sugars, honey or other sweeteners except lactose or other carbohydrate that possesses sweetness equal to or less than that of lactose. Also, the label shall be stated that *“Sugars, honey or other sweeteners should not be added because it may cause dental caries and obesity in infants and young children”*.

2.3 Infant and young children: Energy Required from Complementary Foods

Population nutrient intake goals (WHO, TRS 916)

Dietary factor	Goal (% of total energy, unless otherwise stated)
Total fat	15-30%
Saturated fatty acids	<10%
Polyunsaturated fatty acids (PUFAs)	6-10%
n-6 Polyunsaturated fatty acids (PUFAs)	5-8%
n-3 Polyunsaturated fatty acids (PUFAs)	1-2%
Trans fatty acids	<1%
Monounsaturated fatty acids (MUFAs)	By difference ^a
Total carbohydrate	55-75% ^b

Free sugars^c	<10%
Protein	10-15%^d
Cholesterol	<300 mg per day
Sodium chloride (sodium)^e	<5 g per day (<2 g per day)
Fruits and vegetables	≥400 g per day
Total dietary fibre	From foods^f
Non-starch polysaccharides (NSP)	From foods^f

^a This is calculated as: total fat - (saturated fatty acids + polyunsaturated fatty acids + trans fatty acids).

^b The percentage of total energy available after taking into account that consumed as protein and fat, hence the wide range.

^c The term “free sugars” refers to all monosaccharides and disaccharides added to foods by the manufacturer, cook or consumer, plus sugars naturally present in honey, syrups and fruit juices.

^d The suggested range should be seen in the light of the Joint WHO/FAO/UNU Expert Consultation on Protein and Amino Acid Requirements in Human Nutrition, held in Geneva from 9 to 16 April 2002 (2)

^e Salt should be iodized appropriately (6). The need to adjust salt iodization, depending on observed sodium intake and surveillance of iodine status of the population, should be recognized.

^f See page 58, under “Non-starch polysaccharides”.

19. The Report of the Joint WHO/FAO Expert Consultation on Diet, Nutrition and the Prevention of Chronic Diseases (WHO TRS 916) recommends general population nutrient intake goals of added or free sugars of less than 10 % of daily energy intake as shown in the above table. This recommendation is based on scientific evidence on the contribution of sugars on dental caries and the link between high and regular intake of food high in free sugars may contribute to weight gain and obesity. Obesity as the outcome of excessive fat deposit increased risk of type II diabetes, dyslipidemia, hypertension cardiovascular disease and various types of cancer.

20. The Consultation recognized that higher intake of free sugars threatens the nutrient quality of diet by providing significant energy without specific nutrients. It also considered that restriction of free sugars likely contribute to reduce the risk of unhealthy weight gain, noting that:

- free sugars contribute to the overall energy density of diets.
- free sugars promote a positive energy balance. Acute and short-term studies in human volunteers demonstrated that increased total energy intake whether by free sugars or fat^{12–14} also increased the energy density of the diet. Diets limited in free sugars also showed that total energy intake is reduced and induce weight loss.^{15,16.}

21. Drinks that are rich in free sugars increase overall energy intake by reducing appetite control. Therefore, the food intake after the consumption of high-sugars drinks is lesser than when additional foods of equivalent energy content are consumed.^{14, 17–19} A recent randomized trial showed that when soft drinks rich in free sugars are consumed there is a higher energy intake and a progressive increase in body weight when compared with energy-free drinks that are artificially sweetened.²⁰ Children with a high consumption of soft drinks rich in free sugars are more likely to be overweight.¹⁹

22. Total energy intake per day for infant and young children over six months at different-ages derived from 2 main sources: energy consumed as milk (breast milk or infant formula) and as a complementary food. The amount of energy intake proportionally consumed from breast milk and complementary food varies and decreases gradually with the increasing ages.

23. Considering the amount of added sugar specified in Section 3.4.1 in this standard which is 7.5 g/100 kcal, it makes the concentration of added sugars much higher than that recommendation by the WHO/FAO Report. As 30 kcal from 7.5 g added sugars/100kcal will provide 30% of total energy intake. Similarly 15 g added sugar/200 kcal will provide 60 kcal equivalents to 30% of total energy intake. For better understanding, the estimation of the added sugars in this section could be demonstrated as an example, for the target group of 6-8 months old infants which requires approximately total energy intake of 615 kcal/ day.

24. Total daily energy intake for this age group derives from 2 sources: breast milk and complementary food (CF). Based on the WHO/FAO Report for consumption of added sugars be less than 10% of total energy intake, the allowance for added sugars should be calculated only for CF. If it is based on this assumption, the estimation of added sugars for six to eight months old infants would be 2.5 g/100 kcal. In contraries, if the calculation of added sugars is from 2 sources: breast milk and CF, the amount of added sugars would be 7.69 g/100kcal which are almost the same amount as specified in Section 3.4.1. The calculation could be illustrated as follows:

$$\begin{aligned}
 10\% \text{ of } 615 \text{ Kcal} &= 10\% \text{ of milk} + \text{complementary food} \\
 &= 10\% \text{ of } 410 + 205 \\
 &= 41 + 20.5 \\
 \text{As added sugars} &= 41/4 + 20.5/4 \\
 &= 10.25 \text{ g} + 5.13 \text{ g} \\
 &= 15.38 \text{ g} / 200 \text{ kcal} \\
 &= 7.69 \text{ g} / 100 \text{ kcal}
 \end{aligned}$$

25. If this figure is accepted, the total amount of the allowance for added sugars of 15.38 g will be added only into the part of CF which make the concentration of added sugar to be ~15 g/200 kcal or 7.69 g added sugar/100 kcal or equal to 30% of total energy intake.

Actually, the added sugars should only be calculated from CF as 10% of 205 kcal which should be

$$= 5.13 \text{ g of added sugar} / 200 \text{ kcal}$$

or

$$= \mathbf{2.5 \text{ g of added sugar} / 100 \text{ kcal}}$$

3 Existing Products in the Market

26. There are many kinds of processed cereal-based foods presented in the market. Sugar is added to provide energy and sugary taste. In Thailand, the amounts of sugar as an ingredient are approximately in the range of 2.0-4.0 g/100 kcal. Considering, *the amount of added sugar specified in this standard in Section 3.4.1 shall not exceed 7.5 g/100 kcal and in Section 3.4.2 shall not exceed 5 g/100 kcal*, these amounts are greater than current manufacturing practices. Therefore, reduction of sugar content by half of the levels as stated in the standard in this product will effect very little to the industry.

27. For example, some of the existing products in the market with added sugar less than 2.5 g/100kcal can be calculated to show that the energy density of the products meets the level specified in the standard.

Product	Cereal based (%wt)	Sugar (g/100kcal)	Protein (g/100kcal)	Energy density (kcal/g)
Product 1	42.88	1.95	3.56	1.05
Product 2	48.6	2.08	3.96	1.03
Product 3	48.31	2.08	3.68	1.02
Product 4	48.9	2.11	3.97	1.02
Product 5	48.12	2.08	3.69	1.02
Product 6	47.1	1.97	4.24	0.88
Product 7	48.38	2.82	3.65	1.03
Product 8	48.8	2.85	3.65	1.03
Product 9	43.06	2.98	3.66	1.03
Product 10	71	2.99	3.46	1.01
Product 11	40.69	2.99	3.63	1.03
Product 12	40.79	2.99	3.63	1.03
Product 13	61.6	3.69	3.54	1.02
Product 14	46.4	3.97	3.65	1.03
Product 15	45.9	3.98	3.66	0.86
Average	48.70	2.77	3.71	1.08
Product 1-6 which sugar ≤ 2.5 g/100Kcal & Energy density ≥ 0.8				
Product 7-15 which sugar > 2.5 g/100Kcal & Energy density ≥ 0.8				

28. According to the above table, there are 15 products of processed cereal-based foods available in Thailand. Those are provided for 2 age-group children in Thailand; namely at the ages of 6 months to 3 years, and 1-3 years.

29. Six products out of fifteen are found to comply with the requirements mentioned that energy density is > 0.8 and that the sugar content does not exceed 2.5 g/ 100 Kcal. Additionally, 9 products are found to comply with the requirements mentioned that energy density is > 0.8 and that the sugar content is between 2.5 and 5 g/100 Kcal. As for the products in these categories, their compositions normally contain (?? cereal more than) 40 percent..

30. For products 7-15, the calculation made by lowering the sugar content in these products to be at the level of 2.5 g/100 kcal, the energy density was still found to be > 0.8. Therefore, it is possible to adjust the level of sugars in the products without affecting the quality of the products and will not cause any difficulty to the industries.

4 Conclusion

31. The first three year of a child's life is a critical period during which the foundation for healthy growth and development is built. Feeding of infant and young children is a core element of care during this period. There is ample scientific evidence to show that infants and young children have a preference for sweet foods. International agreed goals to reduce the risks of obesity and adverse health effect in infants and young children and the WHO Global Strategy for Diet and Physical Activity and Health have called for cooperation and collaboration at international, national and local levels. Codex Committees concerned should participate and support these efforts when setting food standards, particularly foods for infants and young children.

32. Therefore, in order to limit the use of sweetened sugar in the standards for the benefit to the health of the future generation, Thailand would like to propose change to the level of added sugars in Section 3.4 as follows:

Section 3.4.1 The amounts of added sugars and added fructose should be changed from 7.5 g/100kcal and 3.75 g/kcal to 3.75 g/100 kcal and 1.9 g/100 kcal respectively, to read:

“3.4.1 If sucrose, fructose, glucose, glucose syrup or honey are added to products mentioned in points 2.1.1 and 2.1.4

- the amount of added carbohydrates from these sources shall not exceed 0.9 g/100 kJ (3.75 g/100 kcal).

- the amount of added fructose shall not exceed 0.45 g/100 kJ (1.9 g/100 kcal).”

Section 3.4.2 The amounts of added sugars and added fructose should be changed from 5 g/100 kcal and 2.5 g/kcal to 2.5 g/100 kcal and 1.25 g/100 kcal respectively, to read:

“3.4.2 If sucrose, fructose, glucose, glucose syrup or honey is added to products mentioned in point 2.1.2

- the amount of added carbohydrates from these sources shall not exceed 0.6 g/100 kJ (2.5 g/100 kcal).

- the amount of added fructose shall not exceed 0.3 g/100 kJ (1.25 g/100 kcal).”

5. Recommendations

33. The Committee is invited to:

- consider this discussion paper in order to propose to the Commission to start new work on the revision on Section 3.4 of the adopted standard.
- consider the proposed draft levels of added sugars in Section 3.4.1 and 3.4.2 as defined in paragraph 32. of this paper.

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