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World Health Organization
Nutrition for Health and Development
Diet and Health
20, Avenue Appia
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Switzerland

Re: Draft Report of the Joint WHO/FAO Expert Consultation on diet, nutrition and the prevention chronic diseases, Geneva, 28 January - 1 February, 2002.

Overall this is an excellent report and will be very useful to nutrition and public health workers as well as practicing physicians. Its credibility is greatly increased by the generally very well documented annexes. It is all the more unfortunate, therefore, than in Annex 4 on page 25 the reference to palm oil in the fourth paragraph is outdated and misleading, and by implication so is the reference to tropical oils on page 20. Even more unfortunately, this misleading concept is reflected in the second paragraph of page 11 in the main document. These need to be corrected, because they cannot be substantiated by a review of the current literature.

I was in charge of the WHO Secretariat for the first Expert Committee on "Ischemic Heart Disease" when Ancel Keys advanced his concept of dietary fat and cholesterol about 1955 and was a member of the WHO Advisory Panel on Nutrition for more than 30 years. I was also responsible for the nutritional component of the Interamerican Atherosclerosis Study. This study found coronary heart disease to be almost non-existent at the time in low income populations, and low dietary fat intake was identified as the major factor. As founder and director of the World Hunger Program of the United Nations University (UNU), my interest in diet and chronic disease continued because of the great difference in prevalence among populations. I continue as Senior Advisor to the UNU Food and Nutrition Program and am the founder and President of the International Nutrition Foundation that sponsors a wide range of nutrition activities in developing countries and a large fellowship program for institution building through advanced training of key personnel. I was the World Food Prize Laureate in 1991.

I am particularly aware of the issue of palm oil and atherosclerosis because I agreed in 1992 to serve as Chairman of the International Scientific Advisory Committee of the Palm Oil Research Institute in Malaysia (PORIM). I accepted because they were willing to support research in the best institutions worldwide to determine the metabolic effects of palm oil in the diet and wanted it to be expertly guided and critically evaluated. The problem was, and is, that palm oil has been unjustifiably linked with the highly saturated coconut oil, even though their composition and metabolic effects are very different. The international committee advised PORIM to sponsor studies in experimental animals including primates by the best investigators that could be identified and complemented by appropriate clinical studies. Emphasis was on

publication in peer reviewed journals. Research on palm oil over the past decade has been reported in over a 100 papers, but none are cited in the WHO report and its Appendix 4. The negative statements referring to palm oil in these two documents are undocumented and misleading.

Initially our advisory committee assumed that the 44% of the saturated fat, palmitic acid, in palm oil would make it behave more like a saturated fat than the unsaturated vegetable oils. However, the experimental animal studies, including those in primates, indicated that palm oil was not behaving as a saturated fat but like other vegetable oils. Substituted for saturated fat, it lowered cholesterol levels as much as did canola oil, corn oil, etc. The clinical studies bore this out. Results are not entirely consistent because of variations in experimental design but the evidence for the lack of a consistent effect of palm oil on serum cholesterol is strong.

There has been a concerted effort to determine why this is the case, given the composition of palm oil. It was postulated that the 40% monounsaturated fat in palm oil or other components such as its high content of tocotrienols, including vitamin E, could be factors. However, it is the work of David Kritchevsky that has provided an explanation for the lack of an atherogenic effect of palm oil. He found that the palmitic acid in palm oil did not elevate cholesterol in rats as long as the configuration of the palmitic acid is primarily on the 1 and 3 positions of the triglyceride and linoleic acid in the two position. However, a racemic mixture with the palmitic acid located randomly on the triglyceride did raise cholesterol.

In reference to the first paragraph on page 11 of the report, the problem lies in the implication of the last two sentences. They do not take into account the evidence that palm oil is no more of a threat to health than the other vegetable oils except for coconut oil. Palm oil has the advantage over other vegetable oils in that it does not require hydrogenation for many food uses including margarines. It is now well established that the *trans*-fatty acids in hydrogenated oils raise cholesterol similarly to saturated fats. Thus an increase in palm oil use that reduces the need for hydrogenation would be a net health benefit. This is also true to the extent that it replaces coconut oil or fats of animal origin, particularly dairy fats or *trans*-fatty acids, the trend of increased palm oil would also be beneficial.

As to the third full paragraph on page 25 of Annex 4, the penultimate sentence calling for "the genetic modification of oilseed crops ...for improving the quality of dietary fat through edible oils" is a very good suggestion. However, singling out palm oil for highest priority is questionable, given the similarity of its atherogenic effects to unsaturated vegetable oils. It would be appropriate to assign research priority in proportion to total consumption of each.

I have a very extensive reprint file on this subject but do not now have the time or secretarial resources to provide the many references that support the various statements above. However, I will make sure that a comprehensive reference list is sent to you if you have not already received one. It is not my intent in this communication to attempt to provide the equivalent of a substantive annex with supporting references. My purpose is to request that the

statements relating to palm oil be reevaluated on the basis of current evidence. This evidence does not support designating palm oil as more highly atherogenic than more unsaturated vegetable oils and it should not be lumped with coconut oil under the rubric of "tropical oils." If specific reference to palm oil is judged desirable in the document or an annex because of its increasing worldwide use, then any statements must be well documented if WHO is to retain its credibility.

Sincerely yours,

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N.B.

The instructions for comments asks for the scope of activities, the mission, interest in diet and chronic disease and the sources of funding of the organizations that I represent. In my case this is difficult but I will try. The United Nations University has an endowment and also obtains funds from multiple sources for activities of its Food and Nutrition Program. The International Nutrition Foundation has no endowment but receives support for a wide range of activities. Among its many funders are UNICEF and the Micronutrient Initiative for the Iron Deficiency Project Advisory Service; Ajinomoto Co. for studies of lysine requirements and lysine fortification; the Ellison Medical Foundation for advanced training fellowships on malnutrition and infection; multiple funding sources for the Center for Studies of Sensory Impairment and Aging (CeSSIAM) in Guatemala; UNU and various international and bilateral agencies for the Food and Nutrition Bulletin that I edit. I receive travel support for the major life span study of Civil War veterans directed by Robert Fogel of the University of Chicago, the award jury for the Prince Mahidol World Health Prize of Thailand, and I am a member of the scientific advisory committee of the Pennington Biomedical Research Center. I am also serving as the chief policy advisor for a multimillion dollar project of the Asian Development Bank for universal iodation of salt and multiple fortification of wheat flour in the 5 countries of Central Asia plus Mongolia. As noted above I have chaired the Scientific Advisory Committee of the Malaysian Palm Oil Research Council for the past 10 years.

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