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Scope_of_Activities: International

Mandate_of_the_Organization: MPOB is the research and regulatory authority of the Malaysian Palm Oil Industry. It is a Malaysian government organization overseeing all aspects of research related to palm oil. Included in its program is a large initiate related to the food and nutritional aspects of palm oil viz a viz other edible oils and fats.

Interest: MPOB has a continued interest in understanding the nutritional effects of palm oil and its components. This is achieved through a concerted research program elucidating the effects of palm oil, fatty acids and minor components in edible oils and fats for their nutritional effects and implications on chronic diseases. The research program funded entirely by MPOB is undertaken in recognized laboratories around the world who share a common objective of understanding oils and fats in human nutrition. This research program has been in operation for the past 18 years and to date a total of 148 studies elucidating the nutritional and physiological effects of palm oil on a variety of disease states have been initiated / completed.

Sources_of_Funding: Government of Malaysia and through a cess (tax) imposed on the palm oil industry in Malaysia. The quantum of tax is based on the total tonnage of palm oil produced in Malaysia annually.

Comments:
Diet, nutrition and the prevention of chronic diseases
Report of the Joint WHO/FAO expert consultation:

Comments from the Malaysian Palm Oil Board (MPOB), Malaysia.

The draft report of this expert committee has made specific recommendations with respect to fat consumption and its impact on cardiovascular disease (CVD). Included in these recommendations are goals to reduce fat intake to no more than 30 energy percent (en%) of which the saturated fatty acid content should not exceed 7 en%. Upper limits for the intake of polyunsaturated (6-10 en%) and trans (< 1 en%) are also recommended while the remaining should be contributed by monounsaturated fatty acids. This, it is hoped would lead to reductions in mortality from CVD.

The Malaysian Palm Oil Board (MPOB), while recognizing the need to initiate such dietary goals aimed at reducing mortality from CVD is unable to comprehend why none of the studies related to palm oil were referenced in this expert consultation report. Despite this omission, the expert committee has taken upon themselves to identify palm oil as an important edible oil whose current composition is recommended for modification.

Where proven correct, MPOB is keen to take appropriate advice from WHO/FAO on the issue of changing the current composition of palm oil, provided the facts of the matter have been deliberated upon in a concise unbiased scientific manner. We are however afraid that this is not the case with the current report and base our observations on the following facts drawn from scientific evidence:

Background

In an effort to understand the health effects of palm oil and the consequences of its long-term consumption, MPOB (formerly Palm Oil Research Institute of Malaysia, PORIM) had initiated a research program focussing its efforts on understanding palm oil for its effects on CVD, cancer and the physiological roles of the fat-soluble minor components (tocopherols, tocotrienols, carotenoids, phytosterols) present in the oil. This research program was undertaken as a global initiative funded entirely by MPOB. The research program, especially those related to CVD were undertaken in populations in both the developed and developing nations. Human studies were further supplemented by animal and cell culture studies to help elucidate the underlying mechanisms of these observed effects.

Researched findings have been published in peer-reviewed journals at the discretion of the researchers and without undue interference from MPOB. We are now concerned that despite such a large scale effort resulting in the generation of substantial scientific publications, the WHO/FAO expert committee has chosen to ignore these publications. This is despite the fact that no less than two of those who peer-reviewed the draft report Annex 4 (The scientific basis for diet, nutrition and the prevention of cardiovascular diseases), Drs. Ghafoorunissa (1) and Stewart Truswell (2), themselves were authors of human studies examining palm oil in their respective populations and whose results showed that palm oil (palm olein) did not behave as a saturated fat when administered at recommended levels of fat intake (1-16).

Effects of Palmitic Acid on CVD

In line with the bulk of available literature, we agree with the recommendations of the expert committee that saturated fatty acids increase risk for heart disease and that their consumption should be regulated, especially in populations consuming excess fat calories. In addition, it is noted that this report shows that the saturated fatty acids have varying degrees of influence on increasing blood lipids with myristic acid being the most potent cholesterol raising saturated fatty acid.

The effect of palmitic acid has been determined to be less potent than that of myristic and lauric acids but its abundant occurrence in food supply has been highlighted. In a number of studies that used palm oil as a natural source of palmitic acid it was reported that the cholesterol raising effects of palmitic acid might be somewhat negated by a sufficient availability of linoleic acid in the diet (5-7 en %) (17-23). Furthermore, human studies conducted at the current levels of fat intake (~30 en%) clearly demonstrated a cholesterol elevating potential of dietary fats high in lauric and myristic acid combinations (occurring naturally in palm kernel oil, coconut oil and dairy fat) relative to palmitic rich vegetable oils/fats especially palm oil (4,8,10,12). Currently, stearic acid is assumed to have neutral effects on CVD and this has been highlighted in this report. The evidence for palmitic acid based diets derived chiefly from palm oil based studies has been ignored in to!
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tality.

Palm oil as a component of a low-fat diet (30 en%)

The liquid fraction of palm oil called palm olein has a higher content of monounsaturated oleic acid and lower content of palmitic acid and used extensively as cooking and frying oil in many parts of the world today. This expert consultation has recommended higher consumption of monounsaturated oleic acid with apparently no adverse effects attributed. However, like many previous efforts, this expert committee has failed to recommend an optimum level of monounsaturated fatty acid intake.

The oleic acid content of palm olein (liquid fraction of palm oil) is approximately 47%. One of the research strategies at MPOB has been to examine if this level of oleic acid compares with higher levels similar to those present in olive, Canola and rapeseed oil. A number of human clinical trials were undertaken in different populations while adhering to a low fat regime (3,5,7,10,11). In all such studies, the cholesterolemic effects of palm olein were equated with that of the recommended monounsaturated oils tested (including olive, Canola and rapeseed). Yet another graphic demonstration was the study that formulated an American Heart Association Step-1 recommended dietary oil blend maximizing palm olein in its composition and which resulted in improved TC/HDL-cholesterol ratios (24). In arriving at specific recommendations pertaining to palm oil these important studies already published in peer-reviewed journals have been ignored by the experts.

Altering the fatty acid composition of palm oil - does current evidence support the recommendation?

Based on prevailing fat consumption trends, most countries can be broadly classified as solid fat or liquid oil markets. The experiences of the edible oils industry have shown that it is rather difficult to change the oils and fats consumption patterns of any given population and realistically these must be considered long term goals. Even when there is strong evidence for the benefits of reducing fat intake to 30 en% from current high levels in European and North American populations, the advice is not heeded readily because of existing food and culinary habits.

Solid fats remain the mainstay in many populations and have mostly been manufactured by hydrogenating vegetable oils into hard fats. Our current knowledge about the adverse effects of hydrogenated fats containing trans fatty acids is well entrenched. This will impose demands on the oils and fats trade to replace hydrogenated fats with naturally occurring semi-solid fats such as palm oil to deliver the texture, consistency and performance characteristics to products including margarine, shortenings, bakery and frying fats. Any attempt to alter existing fatty acid composition of palm oil must address this issue; otherwise a liquid palm oil will in turn require additional processing such as hydrogenation or interesterification to meet product functionalities.

We are rather concerned about the committee's recommendation that "the highest priority should be given to modifying the fatty acid composition of palm oil, because it is becoming the world's leading source of fat and because palm oil in its present composition raises cholesterol and the total/HDL cholesterol ratio". Arguably, the above may be true when fat consumption is high (>35 en%) and subjects are at borderline high cholesterol levels. At current recommended levels of fat intake (30en%) palm oil has been shown to be relatively neutral in comparison to a variety of edible oils tested in different populations (1-16). Had the committee evaluated these findings, the report itself and recommendations thereof would have been more credible. An expert committee of the International Union of Nutrition Sciences (IUNS) reviewed and made recommendations for dietary fat consumption in developing countries (25). This committee recognized the positive role of palm oil (and especially !
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red palm oil) in meeting the dietary fat requirements of populations in developing countries without any implications for adverse health related events (CVD inclusive). Surprisingly, even this report has not been cited despite that fact that the chairperson of this WHO/FAO expert committee, Dr. Ricardo Uauy was a member of the IUNS expert committee. Does this imply that the IUNS recommendations were inadequate, although in our assessment it is more focussed in addressing the needs of the developing economies?

The tools to alter the fatty acid composition of palm oil are available at MPOB, but there is reluctance since the preferred edible oil fatty acid composition is not truly defined, even by this expert committee. For example, our research has shown that it would be possible to increase oleic acid at the expense of palmitic acid while the linoleic acid level

could be maximally altered at about 15% of the oil composition. An ideal olive-type palm oil may be the designer oil of the future.

However, limitations associated with fatty acid impacts on nutrition are making this progress difficult. For example, even this report describes one such limitation: in Rudel's primate study (26), monounsaturated fat had an LDL-cholesterol lowering effect equivalent to polyunsaturated fat but the monkeys developed atherosclerosis equivalent to saturated fat. High oleic acid diets have been reported to have adverse impacts on Factor VII and the thrombotic processes (27). We are currently using a human postprandial model and examining triglyceride species in fat metabolism and unpublished observations indicate that there could be an optimum level for oleic acid in human fat metabolism (28). Coupled to the above, the number of human studies that have reported no significant differences between palm olein and monounsaturated edible oils for effects on cholesterol metabolism (3,5,7,10,11) makes any decision aimed at altering the fatty acid composition of palm oil a tricky affair.

Concluding Remarks

The role of dietary fat in CVD is acknowledged in this report with recommended fat consumption levels of 30 en% applied globally. This is accepted with the knowledge that most developing economies consume fats at significantly lower levels than 30 en% and with increasing affluence, fat intake could be expected to increase. A rather disappointing aspect of this report which is worrying to the palm oil industry is the lack of transparency attributed to those recommendations related to palm oil consumption: the recommendations were arrived at without any reference to the large volume of published literature specifically evaluating palm oil effects on CVD in humans and other model systems.

Currently palm oil is a major edible oil commodity in more than 132 countries worldwide and in many of these developing economies where palm oil is featured, fat consumption is well below recommended levels of intake. Indeed in these populations, there is a recognised need to increase fat intake and palm oil is among the preferred sources of dietary fats.

The recommendations about palm oil in its current format would at best serve to cause undue panic among uninformed consumers; a situation that responsible organizations (WHO and FAO) within the framework of the United Nations charter could ill afford to promote. These organizations should ask the question on behalf of developing economies around the globe - if not palm oil what is the alternative?

We at MPOB are extremely concerned, to say the least. After almost 15 years of research and spending millions of dollars funding research directed at understanding the

nutritional properties of palm oil we find that an expert committee of the WHO/FAO had chosen to ignore all accumulated scientific evidence on palm oil.

We are concerned enough to suggest that WHO/FAO defer publication of current clauses specifically related to palm oil in this report. What would be a most appropriate solution would be the institution of a separate expert committee to review palm oil and its role in human nutrition based on all available scientific literature. A truly unbiased assessment is required in view of the importance of this edible oil commodity in the food supply chain. In order to facilitate this and to plan appropriately for compositional changes in palm oil that may be required, MPOB would be willing to work with WHO/FAO and to even part sponsor the costs of such an expert consultation group.

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