

Replacement of *Trans* Fatty Acids (TFA): The Use of Palm Oil as One of the Alternate Fats in the United States of America

Kalyana Sundram*

INTRODUCTION

Issues related to dietary fats and their implications for health remain a major preoccupation for the American consumer. The large battery of information bombarded on the consumers, to say the least, is bewildering and serves largely to confuse the lay consumer. Yet, most of these dietary recommendations are to lead the consumer towards a healthier lifestyle that, according to the health pundits, should ensure a better and longer life for most of us. Are the consumers getting the correct message based on scientific findings?

In recent times, one of the most debated issues in relation to dietary fats is the role of *trans* fatty acids (TFA) and their implications for human health. After more than 50 years of concerted efforts to sweep the evidence under the carpet, there is now sound evidence that unquestionable health hazards arise from consuming partially hydrogenated unsaturated fat preparations; the bubble has finally burst. One of the most authoritative expert (health) committees in the USA, namely, the Institute of Medicine (IOM), has determined that the upper tolerable limit for TFA

consumption in the human diet is zero. Interpreted simply, there should be no intake of TFA at all.

The FDA, thus has no alternative but to legislate for the reduction and a declaration of TFA content in American foods. By 2006, all food products are required to state this declaration so that the consumers are able to make the correct healthy choice. What appears to be a simple exercise is turning out to be a nightmare for the American food industry. They have to quickly find alternatives to replace the TFA and the alternatives must be healthier than the current hydrogenated fat formulations. This is where it has become troublesome since the industry has forced itself into a corner from which most of them cannot operate effectively to provide the consumer with the

healthy alternative because of certain prejudices.

What really are the alternatives to TFA? To answer this, we must first understand our culinary habits, which are rather difficult to change despite the obvious push to eat a healthy diet. The different staple foods that are traditionally made with hydrogenated fats (and still are) must be reformulated without loss of taste and sensory perception, which make eating them a pleasure rather than a chore. These products including bread, chips, cookies and French fries require certain solid fat profile that is so important for their functionality and taste. Reformulating these with polyunsaturated or monounsaturated oils usually lead to a disastrous results. To dispense with hydrogenated fats from these formulations, the industry has little choice but to turn to saturated fats.

The fear is that the seed oil producers (whose oils are high in polyunsaturates) would be hard hit since most of the food formulations in the USA are derived from partially hydrogenated polyunsaturated oils,

particularly soyabean oil. Most of these formulations would then require a fat or oil that is able to provide the texture and solid fat profile to ensure that the reformulated products are acceptable to the consumer. Despite being a major producer and exporter of oils and fats (both vegetable and animal origin), there is still insufficient local production of an American oil crop that would readily meet both the nutritional and functional characteristics to replace *trans* containing hydrogenated fats. This fact is well recognized within the inner circles of the industry. However, there are still some interest groups that continue to lobby the USFDA and advise that they should take extreme care that the current hydrogenated food products are not replaced by an equally bad fat; and in this case some choose to malign palm oil, once again.

Unlike the early 1980s, there is now a wealth of scientific evidence that supports the fact that palm oil is a wholesome nutritious edible oil. Palm oil is rich in both the saturated palmitic and monounsaturated oleic acids. It also contains sufficient quantities of the polyunsaturated linoleic acids. Given its natural versatile composition, palm oil is easily fractionated into a liquid oil, palm olein (higher content of monounsaturated oleic acid, same constituent as in olive oil, and lower content of saturated palmitic acid) and a solid fat, palm stearin (lower content of oleic acid and higher content of palmitic acid). It is mostly this palm oil and liquid palm olein that reach the American food industry.

MPOB has sponsored more than 168 nutritional trials evaluating palm oil and its components, mostly through research partnerships with a number of American, European and Australian institutions of high repute. The human studies that have evaluated palm oil and palm

olein documented a clear scientific observation: when palm oil/olein is incorporated into the human diet at current recommended levels of fat consumption, it is not deleterious to the human lipid and lipoprotein profiles and hence, does not constitute a risk for coronary heart disease via increased total cholesterol (TC) or LDL-cholesterol level. This augers well for the claim that palm oil/olein is basically a neutral fat at the levels of recommended consumption. The latest review on this particular subject was published in *Lipid Technology* (2004) with the primary papers cited and published in leading biomedical and nutrition journals and also assessable through the scientific journals.

Palm oil/olein has the capacity to add a new health dimension to this current *trans* dilemma and shows promise as a partner for the American food industry in its efforts to reformulate foods with zero *trans* content. But the road that palm oil has to travel, although paved with good science, has again numerous pitfalls and discriminatory actions that continue to spread unwarranted fears to the consumers. If the consumer has easy access to the scientific literature, he should be able to learn that when consumed at the recommended level of fat intake (30% fat energy), palm oil/olein is essentially a neutral fat that compares favourably with the gold standard olive oil and other monounsaturated fats such as canola or rapeseed oils. A true test to this claim is demonstrated simply by blending palm oil with specific liquid oils such that the recommended American Heart Association's Step 1 diet (10% saturates; 10% polyunsaturates; 10% monounsaturates) is achieved, even with palm oil contributing 50% of the blend. The validity of the health benefit of such a blend is underscored by a human dietary trial (published in a peer-reviewed journal) and three US patents that specify claims for

improving one's cholesterol ratio via increases in the beneficial HDL-cholesterol with the palm based AHA Step-1 blend.

Scientific evidence against excess consumption of saturated fats is already well entrenched and associated with increased risk for coronary heart disease (CHD). Science has since advanced beyond this and there is now evidence indicating that all saturated fatty acids are not equally CHD enhancing. For example, stearic acid is touted as neutral for cholesterol metabolism. More important, moderation in the quantity of fats we consume is the key towards a healthy lifestyle. Although American fat intake is showing a slow but steady decline, the current levels are still in excess of the recommended 30% energy consumption advocated.

Which of the two - saturated or *trans* - is the true culprit that has poisoned America? The effects on cholesterol metabolism are definitely different when these fats are compared, with the TFA turning out to be the true culprit. We would do well to remember that the alarm bells against TFA began sounding because they significantly decreased the beneficial HDL-cholesterol, shifting the LDL/HDL-cholesterol ratio for the worse. Saturated fats actually have the capacity to increase the beneficial HDL-cholesterol. The consumer should do well to remember that the IOM assigned zero tolerance for TFA, yet advises moderate intake of saturated fatty acids as the building block for a healthy diet. This is another reason why consumers should insist for separate counts of *trans* and saturated fats in the new food labels proposed by the FDA.

The Centre for Science in Public Interest (CSPI) has spearheaded petitions to the FDA for the labelling of TFA in foods. CSPI and most American institutions view palm oil as a fat rich in saturated palmitic acid, while conveniently forgetting that it is actually a palmitic-oleic rich

* Malaysian Palm Oil Board,
P. O. Box 10620, 50720 Kuala Lumpur,
Malaysia.
E-mail: kalyana@mpob.com