

Market Acceptance of Palm Oil: The Nutritional Angle

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Palm oil and its products are major ingredients in the human food system. They are widely used throughout the world in a variety of food formulations incorporating dietary fat. Surprisingly, the knowledge about the versatility, advantages and positive attributes of palm oil and its products, which are well known to the manufacturers of edible oils, is often not filtering down among the consuming public. In extreme cases, this lack of knowledge even results in a poor acceptance of palm oil. This is indeed unfortunate. More may need to be done to address this. Notwithstanding, manufacturers continue to exploit the excellent characteristics of palm oil mainly because of its widely acknowledged distinct technical advantages over other oils and fats.

The root of this poor image relates to the consumer's concept that palm oil is highly saturated, contains cholesterol and increases risk of heart disease; all of which have been demonstrated to be misleading and false through well focused nutritional studies. Indeed palm oil and its products have negligible amount of cholesterol. In a number of human clinical trials, palm oil has been shown not to increase risk factors associated with coronary heart disease (CHD). Often a cardio-protective effect of palm oil especially through the beneficial modulation of the LDL/HDL cholesterol ratio is strongly evident.

In essence there is now sufficient nutritional knowledge to elevate the image of palm oil to a higher place of acceptance. Can the palm oil industry overcome the existing prejudice (largely health related) and use credible nutritional research data to enhance their product image? The answer, may lie in the present controversy regarding the nutritional implications of *trans* fatty acids.

CHD began to manifest itself as an epidemic around 1920. CHD is a complex disorder and atherosclerosis is the principal pathologic process that underlies CHD which is a leading cause of death in many industrialized countries. Research over the past 100 years in animals, humans and tissue culture systems not only identified the risk factors associated with CHD but also gave birth to the diet-heart/saturated-fat lipid hypothesis. This hypothesized that the principal nutritional factors affecting the incidence and prevalence of CHD was the elevation of serum

total and LDL-cholesterol while obesity was included as an additional risk factor. As a result many expert committees have made recommendations for reductions in saturated fat consumption and increases in polyunsaturated oils consumption. Over the years there has been a gradual switch from saturated animal fats to vegetable oils. However, mortality indices from CHD, although tending to decline marginally, have not shown the expected downturn as a consequence of such recommendations.

Have we gone astray in our efforts to combat CHD by only focusing on the diet-heart/saturated-fat hypothesis. These thoughts are best summarized by Dr. George V. Mann in his recent review: the proposal that obstructive vascular disease is caused by hypercholesterolaemia resulting from an excess of saturated fat and cholesterol in the diet has been repeatedly tested and found to be wrong (Lancet, 1994). He also rightly emphasized that the persistence of many experts to cling to the diet-heart hypothesis is actually impeding progress in the management of CHD since it prevents the pursuit of more plausible hypotheses.

In our minds, at least, the major beneficiary of the diet-heart/ saturated-fat hypothesis has been the polyunsaturated lobby, more so the hydrogenation industry. *Trans* fatty acids began to make their appearance in the human diet around 1912 when the catalytical hydrogenation of polyunsaturated oils to stable solid fats were made available by food technologists. Prior to this, liquid oils were generally useless for many food product formulations as they were prone to oxidative rancidity. Solid fat products were largely butter or lard based. Hydrogenation helped convert these liquid oils into solid feed stocks which quickly found acceptance in the formulation of margarines, shortenings and bakery fats. With the passage of time, the public openly shunned animal fat based products and switched over to the more 'healthy' alternative: hydrogenated polyunsaturates. This trend change was also accelerated by the continued crucification of the saturates by the scientific and medical communities in preference for the polyunsaturates especially polyunsaturated margarines.

Concerted publicity campaigns promoting healthy alternatives to butter saw the emergence and acceptance of polyunsaturated margarines. Their consumption in preference to butter and other saturated fats has been touted to beneficially reduce serum and LDL-cholesterol as well as neutralize thrombotic incidences. How-

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ever, the consumer has not always been told the whole truth. Soft margarines are made by blending unhydrogenated oils with hydrogenated hardened stock fats containing the *trans* fatty acids. The amount of *trans* in these commercial products can vary from 5% to 50% of the total fat. Unfortunately existing food labelling regulations do not require the mandatory declaration of the *trans* content in these products. Hence the consumer willingly buys such products but with the assumption that these products are predominantly polyunsaturated. What has helped to tide such fallacies is definitely the mammoth advertising campaigns orchestrated by the manufacturers to obtain a larger market share for these polyunsaturated margarines.

A surge of recent research findings have cast great doubts on the nutritional quality of hydrogenated fats containing *trans* fatty acids. *Trans* fatty acids have now been confirmed to reduce the beneficial HDL-cholesterol, raise the atherogenic LDL-cholesterol and alter the LDL/HDL-cholesterol ratio detrimentally. Such lipid changes have been computed to enhance relative risk from heart diseases for the general public by many folds. Of even greater concern is the ability of *trans* fatty acids to increase lipoprotein Lp(a) levels which is an independent and powerful risk factor for heart disease. The population study of Willet *et al.* (1993) gives even greater credence to the rising concern against *trans* fatty acids. Willet has suggested that even at his lowest estimates from the effects of *trans* fatty acids on blood lipids, more than 30,000 deaths per year in the United States alone may be due to the consumption of partially hydrogenated vegetable fat; polyunsaturated margarines included.

Are there alternatives to the use of hydrogenated fats in our diet? Can palm oil be made more acceptable and attractive to the consumer? The answer is obviously yes, to both these questions. The physical and chemical characteristics of palm oil are ideally suited for use in margarine and shortening formulations. Moreover, fractionation of palm oil into liquid olein and semi-solid stearin enhances these applications; stearins of several melting characteristics are readily available and are an ideal solid-stock ingredient for margarine formulations. These applications are however not new, since some European countries including the Netherlands and Denmark are already marketing such palm based margarines. Palm olein on the other hand is a popular cooking oil and is especially suited for deep fat frying because of its extreme stability against oxidation. It is worthwhile to note that such palm based formulations for margarines, shortenings and cooking oils are usually *trans*-free.

The challenge now facing the palm oil producers is to convince the general consumer that palm oil is an acceptable healthy alternative to hydrogenated polyunsaturated margarines and other *trans* containing prod-

ucts. There is a wealth of nutritional evidence in support of palm oil today. These were obtained through carefully conducted trials in humans and animals at some of the best nutrition centres around the world. Expert opinion on palm oil is slowly changing towards a more positive outlook. There is even an acknowledgement from a leading epidemiologist that the health effects of palm oil as assessed by the ratio of total cholesterol to HDL cholesterol is more beneficial than that of the hydrogenated fats. Human clinical trials have also shown that the major saturated fatty acid component in palm oil *i.e.* palmitic acid can actually have a neutral effect on blood cholesterol levels. Evaluation of palm oil with the highly monounsaturated rapeseed, canola and olive oils indicate that there are hardly any differences between these oils in their ability to modulate blood cholesterol and lipoprotein levels. These are important findings since the monounsaturates, especially olive oil is being touted as the protective factor against CHD in many Mediterranean populations.

Consumer education will therefore be a very important factor in the market enhancement of palm oil in the near future. The industry would do well to adapt some of the strategies so successfully employed by the polyunsaturated margarine lobbies.

Manufacturers should be prepared to formulate bold and dynamic marketing campaigns in which they should be prepared to declare prominently the palm oil content in their products. For example, if a cooking oil contains 95% palm olein and 5% peanut oil, they should be prepared to label the product by reflecting its true composition and even highlighting the palm olein content. Such marketing efforts will no doubt have positive impacts only when the consumers are well informed.

With the other positive nutritional ingredients including vitamin E and beta-carotenes, palm oil is poised for a major uplift in its nutritional image among consumers. In fact palm oil should prove to be the healthy alternative for mankind's continuing dependence on dietary oils and fats as an important energy source.

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