In this era of information technology and strategic advances in molecular based sciences, one would have expected the knowledge of fats, fatty acids and their association with diseases to have been wrapped up in a package, neat and simple enough to win the confidence of consumers. Yet, fats the much-touted macronutrient, continues to taunt humans, demonstrating various physiological effects that puzzle and fascinate the scientific world. Despite these advances, fats and fatty acids are somehow deemed synonymous with their postulated effects on plasma cholesterol and risk for coronary heart disease (CHD). The consumer has been goaded to think of and to classify fats in terms of the good and bad with respect to CHD. Yet, there is really no such thing as a good or bad fat. In reality their health properties are a function of a multitude of effects that make up the foods we consume daily.

Palm oil continues to be a major dietary fat in the diets of many populations around the world, yet manages to be featured as one of the most misunderstood of the dietary fats. Luckily, some of these misconceptions are the subject of intense scientific scrutiny and the International Palm Oil Congress (PIPOC) provides a regular platform for the deliberation of the latest findings on palm oil nutrition. The supplement in this issue highlights some important advances in our understanding of palm oil effects in human nutrition.

KC Hayes reviews the human studies available on palm oil and palm olein and traces the possibility of formulating the ideal balance among dietary fatty acids using a palm oil base.

Saturated fatty acids continue to be viewed as the culprit responsible for increasing total and LDL-cholesterol, which translates as increased risk for heart disease. Despite this adverse blanketing of saturated fatty acids in human health, there is increasing awareness that not all saturates are equally cholesterol elevating. For example stearic acid is currently considered neutral and efforts are on-going to similarly position palmitic acid, the major saturated fatty acid in palm products. French et al. (Canada) reported that stable isotope studies in humans suggest that when there is sufficient linoleic acid available in the diet, palmitic acid fails to exert a cholesterol raising effect, providing credibility to the hypothesis that palmitic can function as a neutral fatty acid.

Atherosclerosis, which leads to the formation of fatty plaques in the arteries and ultimately constricts blood flow and oxygenation of the heart, was another area of interest at the conference. Researchers at the South African Medical Research Council (Benade and van Jaarsveld) reported that palm oil was comparable to a highly polyunsaturated sunflower seed oil diet in its cholesterolemic effects in African vervet monkeys. The beneficial effects of palm oil in atherosclerosis are partially explained by the rabbit studies of Kritchevsky (USA), who evaluated red palm oil, tocotrienols and palm carotenoids.

Red palm oil contains high concentrations of alpha- and beta-carotene and is presumed to offer a higher vitamin A value than other foods. Cha-Sook et al. (USA) used a stable isotope human model to establish the metabolic vitamin A value of red palm oil.

Current literature on vitamin E for their therapeutical effects on cardiovascular disease is reviewed by Khalid Yusof (Malaysia). Several mega trials have not clearly established benefits conferred by vitamin E supplementations against CHD. Additional studies are advocated for vitamin E in the pathogenesis of atherosclerosis and in the treatment of coronary artery disease.

Sylvester et al. (USA) demonstrated the growth inhibitory actions and the related mechanism of tocotrienols in mammary epithelial cells. Tocotrienols were reported to inhibit early post-receptor events involved in cAMP production. These observations are important in extending the potential benefits of tocotrienols in reducing the risk of breast cancer in women.

While vitamin E and carotenoids are fat-soluble antioxidants from palm oil, the conference was alerted to the presence of water-soluble antioxidants from the palm fruits and fronds that could be used by the nutraceutical industry. Abeywardena et al. (Australia) reported the presence of polyphenols isolated from palm fronds, which demonstrated high antioxidant activities and delayed LDL-oxidation. At the conference, Sundram et al. also described a recent patented technology that isolates and concentrates palm phenolics and flavonoids from palm oil milling effluent (POME).

Overall, the PIPOC 2001 Congress resulted in several new and interesting findings that help to further fortify the image of palm oil. More importantly, several new areas were identified for future research and the proper packaging of this information is expected to help enhance consumer confidence that palm oil is a safe, wholesome and nutritious edible oil.