TRANS –FATS AND SATURATED FATS: THE CASE FOR THEIR DISTINCTION AND SEPARATE CATEGORISATION BY THE CODEX ALIMENTARIUS COMMISSION

It is scientifically incorrect to lump saturated fats and trans-fats into the one category of 'Saturated Fats' on lobbyist grounds for market promotion of unsaturated fats as being the only healthy dietary fats. Palm oil which straddles both saturated and unsaturated fats in its composition is a natural zero trans-fat oil that shares with olive oil similar health benefits – a fact that is deserving of a formal recognition by Codex.

The following are the reasons in support of the case:

1. Unsaturated fats have poor shelf-lives being easily prone to oxidation at multiple olefinic bonds when exposed to air, light and moisture. This leads to their conversion into short chain aldehydes and ketones which give rise to objectionable tastes and odours of the oils and, more significantly, renders the oils also injurious to health when consumed. Saturated fats are considerably less prone to rancidity.

2. Partial hydrogenation of polyunsaturated fats, often conducted under high temperatures and catalytic conditions, does reduce the level of incidence of rancidity, but brings with it the undesirable transformation of many of the naturally occurring cis-disposition of the olefinic bonds to the trans-configuration. This then is the industrially-realised source of trans–fats which have been unequivocally shown to be detrimental to cardiac health in raising the level of liposomal LDL ("bad" cholesterol) while simultaneously lowering that of liposomal HDL ("good" cholesterol).

3. Recent evidence from randomised clinical trials on saturated fats have negated the hitherto widely propagated narrative that they are hugely bad for cardiac health on the singular ground that their consumption consistently shows raised LDL levels in blood tests. The contrary now appears to be the case with their long term use; their other health benefits are also beginning to emerge.

4. Palm oil, which is derived from the mesocarp of the fruit, has near equal compositional amounts of saturated fats [palmitic C16:0, 44%] and unsaturated fats [oleic C18:1, 40%; linoleic C18:2, 10%], but is often classified as a saturated fat. But as with coconut oil, both these palm-derived oils contain no trans-olefinic bonds whatsoever to be collectively grouped with trans-fats. Indeed, they qualify for strict labelling as natural zero-trans fats. This is also true for palm kernel oil derived from the kernel which contains lauric acid (C12:0, 48%) as the predominant fatty acid, followed by near equal amounts (15-16%) of myristic (C14:0) and oleic (C18:1) acids.

5. Palm oil is a stable oil, easily withstanding temperatures of up to 250 deg C during deodorisation, and can be fractionated into a liquid fraction called palm olein (used as cooking oil) and a solid fraction called palm stearin which finds use in margarines, shortenings, etc.

The major triglycerides of palm olein are POO (30.6%) and POP (19.0%) (P= palmitic, O= oleic). In palm stearin, the major triglyceride is PPP; dominant among the unsaturated triglycerides present are POP and POO.

6. Nutritional studies have shown that palm olein confers health benefits akin to the so-called ‘healthy’ olive oil (contains predominantly triolein, OOO, followed, in order of incidence, by POO, OOL and POL). Interestingly, in both palm oil and olive oil, the mid-point of the triglyceride backbone (the sn-2 position), is dominantly occupied by the mono—unsaturated oleic acid, which survives its position upon digestion in the intestinal tract to result in 2-MAG which gets absorbed along with the released fatty acids from the sn-1 and sn-3 positions at the enterocytes. While the specific role and importance of oleate in the critical sn-2 position awaits further study, it has been a well confirmed observation that oleic acid reverses some of the known deleterious effects that elevated levels of free palmitic acid can induce on cells such as inflammation, mitochondrial dysfunction and insulin resistance, including in cardiac muscle cells Oleate has also been shown to reduce proliferation and apoptosis in vascular smooth muscle cells that may contribute to an ameliorated atherosclerotic process and plaque stability.

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