No genotoxic effect was observed. It can, therefore, be assumed that the tumours observed in the long-term animal study (mainly benign) only occur above a threshold value. There are no findings from human studies.

Recent studies have identified 3-MCPD fatty acid esters in refined edible fats and in fat-containing foods. 3-MCPD esters are compounds of 3-MCPD and various fatty acids which are formed at high temperatures under hydration following a reaction between fats and chloride ions. Studies by the food control authorities in Baden-

Württemberg showed that all refined vegetable oils and fats contain 3-MCPD fatty acid esters. Only oil that had not undergone any heat treatment (e.g. native olive oil) did not contain the substance.

3-MCPD fatty acid esters are formed at high temperatures, probably during the deodorisation of edible fats and oils, the last stage in refining, during which undesirable odorous and taste-bearing substances are removed. Besides 3-MCPD fatty acid esters also 2-MCPD fatty esters, 1,3-dichloropropane-2-ol (1,3-DCPO) and 1,2-dichloropropane-2-ol (1,2-DCPO) fatty acid esters have been identified in heat processed foods.

No toxicological data are available on 3-MCPD fatty acid esters, nor for that matter on any of the other above mentioned propanol fatty acid esters. Nonetheless, it would be desirable to have available oil processing techniques that minimize formation of these unwanted chloropropanol fatty acid esters.

SUMMARY ~~OF THE INVENTION~~

The inventors have developed a process that enables the manufacture of palm oil fractions that contain virtually no 3-MCPD-esters. Unexpectedly, the inventors have discovered that the formation of 3-MCPD-esters during the production of palm oil fractions can be minimized effectively by first fractionating a crude palm oil having a low free fatty acid content and a low diglyceride content, followed by deodorisation of the crude palm oil fractions so obtained. In contrast, in conventional processes for the production of palm oil fractions, crude palm oil is deodorised before fractionation.

More specifically, in one aspect, there is~~the present invention~~ provideds a process of manufacturing palm oil fractions that contain virtually no 3-MCPD-esters, the process comprising:

- fractionating a crude palm oil having a free fatty acid content of less than 1.5% and a diglyceride content of less than 5.5 wt.% to produce at least~~e~~ one crude palm oil fraction,

said crude palm oil fraction being selected from crude palm olein having an iodine value of at least 55 and crude palm stearin having an iodine value of less than 48; and

- deodorising the crude palm oil fraction to produce a deodorised palm oil fraction having a 3-MCPD-ester content of less than 1 ppm.

Although the inventors do not wish to be bound by theory, it is believed that the low 3-MCPD-ester levels in the palm oil fraction obtained by the present process can be realised by utilizing a crude palm oil of very low free fatty acid (FFA) content and by fractionating such crude palm oil prior to deodorisation.

Another aspect~~The invention further~~ provides a method of preparing a food product, said method comprising incorporating into said food product 3-99% wt.% of a palm oil fraction obtained by the above described process.

DETAILED DESCRIPTION OF THE INVENTION

Accordingly, one aspect of the invention relates to a process of manufacturing a palm oil fraction comprising:

- fractionating a crude palm oil having a free fatty acid content of less than 1.5% and a diglyceride content of less than 5.5 wt.% to produce a crude palm oil fraction, said crude palm oil fraction being selected from crude palm olein having an iodine value of at least 55 and crude palm stearin having an iodine value of less than 48; and
- deodorising the crude palm oil fraction to produce a deodorised palm oil fraction having a 3-MCPD-ester content of less than 1 ppm.

The term "oil" whenever used herein encompasses both oils that are liquid at ambient temperature and oils that are solid at ambient temperature (fats).

The crude palm oil employed in the present process typically contains at least 90 wt.% of triglycerides. Other components that may be contained in the crude palm oil in significant quantities include diglycerides, monoglycerides, fatty acids and phospholipids.

A suitable analytical method for determining 3-MCPD-ester content is described in R.Weisshaar, "*Determination of total 3-chloropropane-1,2-diol (3-MCPD) in edible oils by cleavage of MCPD esters with sodium methoxide*", Eur. J. Lipid Sci. Technol. (2008) 110, 183-186. Improved analytical methods for the quantitative determination of 3-MCPD in triglyceride oils are currently being developed and validated.