Palm oil is a mixture of mixed or homogeneous glyc erides (i.e., esters of glycerine) in which a small amount of unsaponifiables are present in solution which mainly consist of isomeric carotenes besides carotene-like pigments and sterols. An oil of African origin will contain about 1 gram of carotene per kilogram.

It is well known to separate the oil, irrespective of its acid value, into two fractions, either by crystallization at 18-18°C, or by the action of selective solvents, by hydro-extraction, press filtering or centrifuging or any other mechanical method. One of the said fractions is solid up to a temperature of 30 to 60°C and represents about 3/5 of the weight of palm oil treated. Said fraction is light in color, which means that very little carotene-like pigments are retained therein. After complete neutralization, deodorization and bleaching a vegetable fat is obtained which can be used either directly for cooking purposes or advantageously in the manufacture of margarine.

The second fraction is fluid at temperatures higher than 150°C and represents about 2/5 of the weight of the initial oil. It has a decided deep red color owing to the presence of the bulk of the carotene-like pigments present in the palm oil. It consists mainly of mixed glycerides of palmitic, linoleic, and above all, oleic acids.

The neutralization of the free acids in the palm oil may be carried out either before or after the fractionation.

The last-mentioned glyceride-containing fraction may be subjected to the conventional reaction well known as alcoholysis. The glycerides are converted thereby into esters of a lower molecular alcohol in the presence of an acid or an alkaline catalyst. In the case of red oil, sodium or potassium hydroxide is used. With a yield of at least 95% there are obtained palmitates, oleates and linolenates of the alcohol used while glycerine is separated. Where the liquid fractions of the oil are used the ester mixture will contain about 70% of oleate.

A glycerine is decanted which is comparatively concentrated. The residue is washed with water until neutral and the excess alcohol may be recovered by distillation.

The methyl esters (which are strongly colored red by the carotene) are then treated for extraction of the pigment.

My invention consists in saponifying esters of low-molecular alcohols with a strong alkali in alcohol. The process should be carried out at no more than 60°C and in a nitrogen atmosphere. The soap is dried in a vacuum and extracted with an organic solvent such as petroleum ether or a chloro-derivative thereof by which the carotenes are dissolved. By distilling off the solvent a residue is obtained which consists of the unsaponifiable portion of the palm oil. In the case of the liquid fraction of palm oil, the extraction is facilitated considerably by the fact that a much smaller amount of soap has to be treated which corresponds but to one third of the weight of the initial palm oil.

To the solution obtained there may be added a controlled amount e.g. of a liquid vegetable oil such as colza-, olive- or peanut oil, the solvent then being driven off on a hot water bath. An oily carotene preparation remains which is particularly suitable for alimentary or therapeutic purposes.

Example.—100 kgs. of raw palm oil having an acid value of 10% are neutralized with sodium hydroxide. About 80 kgs. of neutral oil are obtained which are subjected to fractional crystallization at about 15°C. By filter-pressing there are obtained 50 kgs. of a concrete fat which is light in color and beside 30 kgs. of a liquid red oil.

To 30 kgs. of red oil there are added 7 to 10 kgs. of concentrated methyl alcohol containing 1 to 3% of alkali hydroxide. The mixture is agitated for 3 hours at surrounding temperature. About 2 kgs. of high-percentage glycerine separate out which are removed by decanting.

To the 30 kgs. of red esters thus obtained there are added 14 kgs. of 30°C soda lye, the operation being carried out in a nitrogen atmosphere and care being taken that the temperature remains below 60°C. The said temperature is maintained for 3 hours while agitating mechanically and the whole product is dried in a vacuum under continued agitation.

The soap is then extracted with about 50 litres of petroleum ether or chloroform until same is bleached as much as possible, after which 1 to 2 kgs. of colza, or olive, or peanut oil are added. The petroleum ether is distilled off and an oily carotene-containing residue is obtained in which the carotene-content is about 3%, more or less depending on the percentage of the same in the initial palm oil.

What I claim is:

In a method of producing carotene from palm oil, the steps which consist in successively separating the oil into a solid fraction and a liquid...
carotene-rich fraction, alcoholizing the latter to esters of low-molecular alcohols, saponifying said esters with a strong alkali under a vacuum and extracting the resulting soap with an organic solvent.

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