

MONO- AND DIGLYCERIDES

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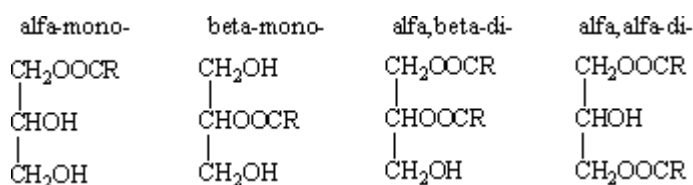
SYNONYMS

Glyceryl monostearate, glyceryl monopalmitate, glyceryl monooleate, etc; monostearin, monopalmitin, monoolein, etc.; GMS (for glyceryl monostearate); INS No. 471

DEFINITION

A mixture of mono- and diglyceryl esters of long chain, saturated and unsaturated fatty acids that occur in food fats; contain not less than 30% of alpha-monoglycerides and may also contain other isomeric monoglycerides, as well as di- and triglycerides, free glycerol, free fatty acids, soap and moisture; usually manufactured by the glycerolysis of edible fats and oils, but may also be prepared by esterification of fatty acids with glycerol, with or without molecular distillation of the product.

Structural formula



where -OCR represents the fatty acid moiety

Formula weight

Glyceryl monostearate: 358.6
Glyceryl distearate: 625.0
These are two major components of commercial products

DESCRIPTION

White or cream coloured hard fats of waxy appearance, plastic products or viscous liquids

FUNCTIONAL USES Emulsifier

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4)

Insoluble in water; soluble in ethanol, chloroform and benzene

Infrared absorption

The infrared spectrum of the sample is characteristic of a partial fatty acid ester of a polyol

Tests for fatty acids (Vol. 4)

Passes tests

Test for glycerol (Vol. 4)

Passes tests

PURITY

Water (Vol. 4)

Not more than 2.0% (Karl Fischer Method)

Acid value (Vol. 4) Not more than 6

Free glycerol (Vol. 4) Not more than 7%

Soap Not more than 6%, calculated as a sodium oleate
Add 10.00 g of the sample to a mixture of 60 ml of acetone and 0.15 ml of bromophenol blue solution (0.5%), previously neutralized with 0.1 N hydrochloric acid or 0.1 N sodium hydroxide. Warm gently on a water bath until solution is complete, and titrate with 0.1 N hydrochloric acid until the blue colour is discharged. Allow to stand for 20 min, warm until any solidified matter has re-dissolved and, if the blue colour reappears, continue the titration. Each ml of 0.1 N hydrochloric acid is equivalent to 0.0304 g of $C_{18}H_{33}O_2Na$.

Lead (Vol. 4) Not more than 2 mg/kg
Determine using an atomic absorption technique appropriate to the specified level. The selection of sample size and method of sample preparation may be based on the principles of the method described in Volume 4, "Instrumental Methods."

METHODS OF ASSAY

Determine as described under *alpha-Monoglyceride and Free Glycerol Contents* in Volume 4