minutes, with no significant increase in blood-glucose levels during this time.[3]

15 Handling Precautions

Observe normal precautions appropriate to the circumstances and quantity of the material handled.

16 Regulatory Status

Included in the FDA Inactive Ingredients Database (oral, tablet). Included in the Canadian Natural Health Products Ingredients Database.

17 Related Substances

Dextrose; mannitol.

18 Comments

Included in the BP 2017 as a general reagent. D-Mannose is a naturopathic remedy for urinary tract infections.

D-Mannose has recently been investigated as a surface modifier for nanoparticles and liposomes to enhance oral and alveolar delivery by macrophage targeting.[4–7] Research has also shown that D-mannose is useful in freeze-dried suspensions to prevent aggregation.[8]

The EINECS number for D-mannose is 222-392-4. The PubChem Compound ID (CID) for D-mannose is 18950.

19 Specific References

1 Danisco. Product information: D-mannose. http://www.danisco.com/wps/wcm/connect/www/corporate/products/product_range/rare_sugars/d_mannose (accessed 16 October 2015).
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3 Alton G, *et al.* Direct utilization of mannose for mammalian glycoprotein biosynthesis. *Glycobiology* 1998; 8(3): 285–295.
4 Nimje N, *et al.* Mannosylated nanoparticulate carriers of rifabutin for alveolar targeting. *J Drug Target* 2009; 17: 777–787.
5 Fievez V, *et al.* Targeting nanoparticles to M cells with non-peptidic ligands for oral vaccination. *Eur J Pharm Biopharm* 2009; 73: 16–24.
6 Chono S. Effect of surface-mannose modification on aerosolized liposomal delivery to alveolar macrophages. *Drug Dev Ind Pharm* 2010; 36: 102–107.
7 Nahar M, *et al. In vitro* evaluation of surface functionalized gelatin nanoparticles for macrophage targeting in the therapy of visceral leishmaniasis. *J Drug Target* 2010; 18: 93–105.
8 Kamiya S. Physical properties of griseofulvin-lipid nanoparticles in suspension and their novel interaction mechanism with saccharide during freeze-drying. *Eur J Pharm Biopharm* 2010; 74: 461–466.

20 General References

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21 Authors

ME Quinn, RC Rowe.

22 Date of Revision

21 April 2017.

Medium-chain Triglycerides

1 Nonproprietary Names

BP: Medium-chain Triglycerides
PhEur: Triglycerides, Medium-Chain
USP–NF: Medium-Chain Triglycerides

2 Synonyms

Bergabest; caprylic/capric triglyceride; *Captex 300*; *Captex 355*; *Coconad*; *Crodamol GTCC*; *Delios*; glyceryl tricaprylate/caprate; *Kollisolv MCT*; *Labrafac CC*; *Labrafac Lipo*; *Labrafac WL1349*; MCT oil; *Miglyol 810*; *Miglyol 812*; *Myritol*; *Neobee M5*; *Nesatol*; oleum neutrale; oleum vegetable tenue; *ProKote 2855*; *Stelliesters MCT*; thin vegetable oil; triglycerida saturata media; *Waglinol 3/9280*.

3 Chemical Name and CAS Registry Number

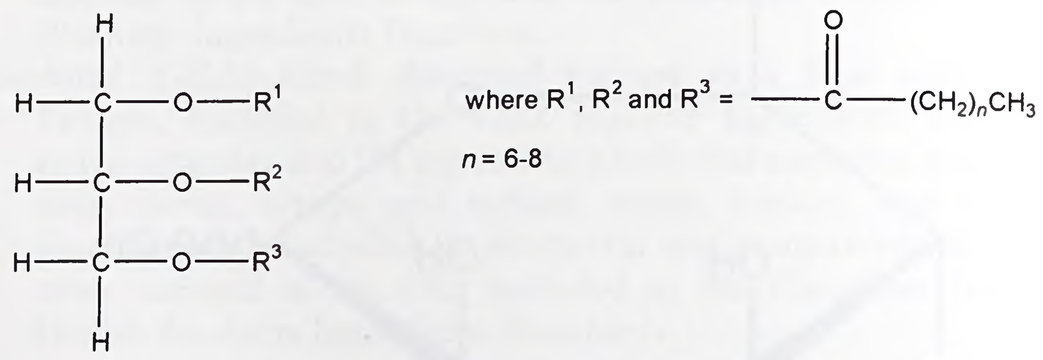
Medium-chain triglycerides [438544-49-1]

4 Empirical Formula and Molecular Weight

≈500 (average)

The PhEur 9.2 describes medium-chain triglycerides as the fixed oil extracted from the hard, dried fraction of the endosperm of *Cocos nucifera* L. or from the dried endosperm of *Elaeis guineenis* Jacq. They consist of a mixture of triglycerides of saturated fatty acids, mainly of caprylic acid and of capric acid. They contain not less than 95% of saturated fatty acids.

5 Structural Formula



See also Section 4.

6 Functional Category

Emulsifying agent; solvent; suppository base; suspending agent; tablet and capsule diluent.

7 Applications in Pharmaceutical Formulation or Technology

Medium-chain triglycerides have been used in a variety of pharmaceutical formulations including oral, parenteral, and topical preparations.

In oral formulations, medium-chain triglycerides are used as the base for the preparation of oral emulsions, microemulsions, self-emulsifying systems, solutions, or suspensions of drugs that are unstable or insoluble in aqueous media, e.g. calciferol. Medium-