

PRODUCT DATA SHEET

Monogalactosyldiglyceride (hydrogenated), plant

Catalog No: 1058

Common Name: MGDG (hydrogenated)

Source: natural, plant

Solubility: chloroform/methanol/DI water
(4:1:0.1)

CAS No: 41670-62-6

Molecular Formula: C₄₅H₈₆O₁₀

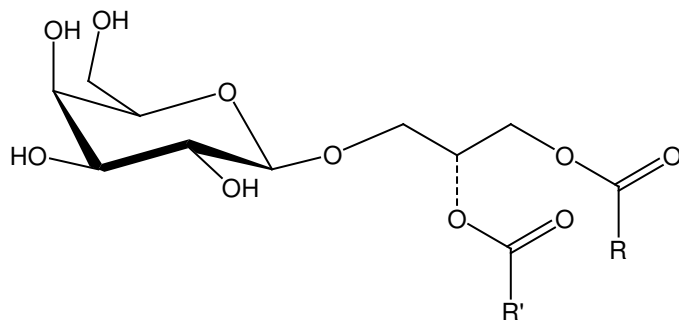
Molecular Weight: 787 (stearoyl)

Storage: -20°C

Purity: TLC > 98%; identity confirmed by MS

TLC System: chloroform/ methanol/ DI water
(80: 20: 1 by Vol.)

Appearance: solid



Application Notes:

Monogalactosyldiglyceride (MGDG) is one of the main lipids of chloroplast membranes and is one of the most abundant lipids in all photosynthetic tissues, including those of algae and some bacteria. In plants it is much less prevalent in non-photosynthetic tissues and is synthesized by MGDG synthase localized in chloroplast envelope membranes.¹ MGDG is formed by the de-phosphorylation of phosphatidic acid or phosphatidylcholine and the subsequent reaction with 5-diphosphate(UDP)-galactose. Monogalactosyldiglycerides do not form a lipid bilayer in the lipid membrane whereas digalactosyldiglycerides (DGDG) do and a proper ratio of these two diglycerides is critical to membrane function. MGDG is an important lipid in photosynthesis although its role is not fully understood and is undergoing much active research.² In cells undergoing photosynthesis the photosystem I complex contains three moles of MGDG and one mole of phosphatidylglycerol while photosystem II contains four moles of DGDG. The proper ratio of lipids is needed for the effective crystallization of the light-harvesting complex II. MGDG plays an important role in the organization and activity of the embedded protein supercomplexes of the thylakoid membrane of photosystem II and it helps to maintain an optimum lipid:protein ratio.³

Selected References:

1. Yoshiki Yamaryo et al. "In vitro reconstitution of monogalactosyldiacylglycerol (MGDG) synthase regulation by thioredoxin" FEBS Letters, Vol. 580:17 pp. 4086-4090, 2006
2. Henrik Aronsson "The galactolipid monogalactosyldiacylglycerol (MGDG) contributes to photosynthesis-related processes in *Arabidopsis thaliana*" *Plant Signaling and Behavior*, Vol. 3:12 pp. 1093-1095, 2008
3. Feng Zhou et al. "Effect of monogalactosyldiacylglycerol on the interaction between photosystem II core complex and its antenna complexes in liposomes of thylakoid lipids" *Photosynthesis Research*, Volume 99:3 pp. 185-193, 2009

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