

CRITICAL MICELLE CONCENTRATION (CMC) OF SYNTHESIZED NONE IONIC SURFACTANT (β -SITOSTERYL- β -D-GLUCOPYRANOSIDE)

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Glycolipids are lipids containing a monosaccharide or polysaccharide group. Different kinds of glycolipids can be prepared by changing the alkyl group and the carbohydrate group. In carbohydrate chemistry, it is more common to use acetylated saccharides without free hydroxyl groups prepared by reaction of monosaccharide with acetic anhydride. In the present study, Penta-O-acetyl- β -D-Glucopyranoside which is a promising starting material for the synthesis of many glycolipids was reacted with β -Sitosterol in the presence of borontrifluoride etherate as a catalyst under nitrogen atmosphere. The product was separated by column chromatography and recrystallized with 95% (w/w) methanol. The acetylated product was deacetylated by reacting with sodium methoxide to obtain the target compound. The chemical structures of protected and deprotected compounds were confirmed by FTIR spectroscopy and melting point measurements. Glycolipids are known to show Lyotropic liquid crystal properties due to their amphiphilic nature. The studies of such glycolipids have shown that they possess surfactant properties as well. The critical micelle concentration (CMC) of synthesized β -sitosteryl- β -D-glucopyranoside was determined by using both UV spectroscopy method and Turbidity measurements. The CMC value of $8.5 \times 10^{-6} \text{ mol dm}^{-3}$ of β -sitosteryl- β -D-glucopyranoside suggests that it is a non-ionic surfactant. The hydrophilic-Lipophilic balance (HLB Value) calculated is 6.24 which indicate this glycolipid can be used for W/O emulsion as a co-surfactant and anti-foaming agent.

Keywords: Saccharides, β -Sitosterol, Penta-O-acetyl- β -D-Glucopyranoside, β -sitosteryl- β -D-glucopyranoside