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Synthesis of glucopyranoside carbohydrate derived liquid crystal

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Glycolipids are amphoteric liquid crystals forming lyotropic liquid crystals in aqueous solutions and thermotropic liquid crystals in their dry form as a result of microphase separation of the hydrophilic and hydrophobic parts in the molecules. In this study, glycolipid was synthesized by introducing β-sitosterol aglycone to peracetylated D- glucose followed by deprotection via alkaline treatment. FTIR, ^{1}H-NMR, ^{13}C-NMR, optical birefringence, differential scanning calorimetry and XRD techniques were employed to characterize the glycolipid and its phase structure. The product was shown to form thermotropic hexagonal columnar/smectic phase upon cooling the isotropic liquid.

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