

Synthesis of Free and Esterified Steryl Glucosides

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Esterified steryl glucosides are minor components in vegetable oils, especially in palm oil and soybean oil. During the production of biodiesel via methanolysis under alkaline conditions, acetylated steryl glucosides (ASG) are converted into free steryl glucosides (FSG), which are quite insoluble in biodiesel and could precipitate during longer storage. Without further purification steps this could lead to serious filter plugging in diesel engines, when using biodiesel or biodiesel/fossil fuel blends. Recent research activities have been focusing in identifying and analyzing these minor components in vegetable oils and/or biodiesel. For these studies it is essential to have proven standard material of both ASG and FSG. In this paper we want to present a general synthesis route starting from glucose pentaacetate, which is brominated in 1-position and then reacts with sterols. After alkaline deacetylation different FSG can be obtained. Further purification can be done with preparative chromatography. FSG can be esterified with different fatty acids using lipase Novozyme 435 as catalyst. The synthetic route is outlined for 6'-O-palmitoyl-cholesteryl- β -D-glucopyranosid. Chromatographic and NMR data are presented.