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Lipase-catalyzed synthesis of a functional xylitol ester of 7, 10-dihydroxy-8(E)-octadecenoic acid

Yeon-Jung Lee[1], **Ji-Sun Moon**[1], **Hyung-Geun Lee**[1], **Ching T Hou**[2] and **Hak-Ryul Kim**[1]
[1]Kyungpook National University, South Korea
[2]National Center for Agricultural Utilization Research, USA

Hydroxy fatty acids have been widely studied because they have various biological properties that can be utilized in many industries, compared with other types of fatty acids. Among the hydroxy fatty acids, our research group focused on 7, 10-dihydroxy-8(E)-octadecenoic acid (DOD). We confirmed that the strong antibacterial activities of DOD against food-borne pathogenic bacteria and plant pathogenic bacteria. Saccharide–fatty acid esters are important biodegradable emulsifiers in foods, cosmetics, and pharmaceuticals; hence, we focused on enzymatic synthesis of DOD-saccharide esters for industrial utilization of DOD. Several saccharides were screened as substrates for esterification with DOD. As a result, DOD xylitol ester was successfully produced at 50ºC with stirring at 200rpm for 24 hours in the presence of lipozyme RMIM as enzyme, and t-butyl alcohol as solvent. Its structure was confirmed by GC/MS.

yeon2g@knu.ac.kr