

Production of Oxygenated Unsaturated Fatty Acids from Oleic Acid by *Flavobacterium* sp. Strain DS5

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Soybean oil is a relatively cheap raw material and an attractive candidate for bioindustries. The keto and hydroxy group gives fatty acid special properties, such as higher viscosity and reactivity compared with other fatty acids. Keto- and hydroxy- fatty acids are useful industrial chemicals used in plasticizer, surfactant, lubricant and detergent formulations because of their special chemical attributes. In this study, a microbial isolate, *Flavobacterium* sp. Strain DS5 (NRRL B-14859), was used to convert oleic acid to 10-ketostearic acid (10-KSA) more than 70% yield. A small amount of 10-hydroxy stearic acid (10-HSA) was also produced during the bioconversion. In flask culture, the maximum production of 10-KSA and 10-HSA was 3.9 g/L and 0.5 g/L, respectively. We investigated the effects of glucose, yeast extract, and oleic acid addition on cell growth and production of 10-KSA and 10-HSA. We also studied the methods for the quantitative and qualitative analysis of several fatty acids by gas chromatography, gas chromatography-mass spectrometry, and ¹H- and ¹³C-nuclear magnetic resonance.