

**Establishment of suitable fed-batch process for simultaneous biodiesel and docosahexaenoic acid production using *Aurantiochytrium* sp. KRS101**

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*Aurantiochytrium* sp. is one of the most important heterotrophic microalga due to its high lipid content mostly consisting of palmitic acid (PA) and Docosahexaenoic acid (DHA). DHA is a high value-added natural substance for health-assisting food, and lipids extractable with DHA can also be efficiently converted into biodiesel. In this study, we attempted to improve biodiesel and DHA production from *Aurantiochytrium* sp. KRS101. Yields of lipid, PA, and DHA to glucose and yeast extract, biomass yield coefficients to glucose and total nitrogen, and morphological changes of cells were investigated. Yeast extract influenced biomass and lipid yield strongly while consumption of glucose was directly related to cell growth. High lipid yield was exhibited from 40 g/l glucose and 10 g/l yeast extract, and 20 g/l sea salt prevented loss of biomass from cell rupture and floating layer. In this optimized medium, the feed type of fed-batch cultivation was developed based on the effects of glucose and yeast extract. Compared to batch cultivation, higher levels of final biomass, PA, and DHA were obtained and yields of PA and DHA increased by 8% and 22% through the fed-batch cultivation.