Cultivation of *Aurantiochytrium* sp. KRS 101 for simultaneous production of both docosahexaenoic acid (DHA) and biodiesel

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Aurantiochytrium sp. is one of the most important marine heterotrophic microalga for industrial cultivation, due to its high lipid and DHA (omega-3) content. DHA is a high value-added natural substance for health assisting food, and lipids extractable with DHA can also be efficiently converted into biodiesel. Generally, heterotrophic growth of this microalga has been well accepted approach, since autotrophic growth has the limitation in terms of low maximum biomass productivity. In this study, we attempted to achieve the maximum productivities of both biodiesel and DHA from Aurantiochytrium , which in turn help to provide economical competitiveness in the market of biodiesel. To this ends, Aurantiochytrium sp. KRS 101 was cultivated in order to establish high-density cultivation with high lipid content by varying carbon and nitrogen sources. Growth curves and yield coefficients under each condition were obtained, and lipids were subsequently analyzed by gas chromatography after the extraction and conversion process. From these data, optimum fed-batch cultivation using Aurantiochytrium could be established for producing higher yield of biomass and lipid.