Asteromonas gracilis (Prasionphyceae) as a model for production of β-carotene and total lipids

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Abstract:

ABSTRACT The effect of nutrients deficiency (phosphorus, nitrogen and sulphur) on growth, ultrastructure, β-carotene and total lipid contents of the green alga Asteromonas gracilis has been examined. Algal cells were cultured under conditions of nutrients deficiency. The maximum growth rate and minimum generation time calculated on basis of chl. a were 0.032 and 21.9, respectively for control culture. The most changes in ultrastructure of A. gracilis observed when cells were cultivated without nitrogen source, the changes are in the structure of chloroplast, where the degradation of thylakoids was observed and the grana structure of thylakoids had almost disappeared as well as accumulation of starch grains were easily detected. The total carbohydrates were decreased with deficiency of phosphorus and sulphur, but increased in case of nitrogen deficiency. On the other hand, the production of β-carotene and total lipids was enhanced with phosphorus, nitrogen and sulphur deficiency.

Keywords:

Keywords: Asteromonas gracilis, β-carotene, total lipids, nutrients deficiency

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