

## **A Phylogenetic Analysis and Effect of NO<sub>3</sub> Regime on the Level of N-3 Polyunsaturated Fatty Acids in *Thalassiosira weissflogii* Isolated from Caspian Sea**

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**Abstract :** *Thalassiosira weissflogii* with proper size and nutrition value specially PUFA n-3 has been widely used in bivalve shellfish larviculture and shrimp industries. This diatom was isolated from Caspian Sea and identified with morphology and molecular characters. *T. weissflogii* was cultivated in normal and nitrogen deficiency F2 medium during 18 to 30 days, in addition, the growth indices, total lipid, and EPA-DHA content were elucidated. The growth indices of the cells decreased during the stress experiments while the total lipid levels increased during prolonged culturing (30 days). The maximum level of C20:5 was calculated as 8.8 (%TFA) in normal condition during 30 days; however, the combination of N- deficiency condition with prolonged culturing led to the increase of the level of C22:6 from 3.5 to 12.63 (%TFA). The concept of N-deficiency along with prolonged culturing of *Thalassiosira weissflogii* can improve PUFA n-3 content in order to use in shellfish and shrimp industries.

**Keywords :** DHA, *Thalassiosira weissflogii*, nitrogen deficiency, EPA, fatty acids, aquafeed

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