

Use of cheese whey as an alternative culture medium for the production of *Donalia Salina* algae

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The aim of this study was to investigate the effects of different concentrations of cheese whey and Walne culture medium to produce *Dunaliella salina* biomass and evaluation of its biochemical properties. For this purpose, three factors including the concentration of Walne culture medium (0-50 μ l), the percentage of cheese whey (0-5 %) and incubation time (0-14 days) using Box-Behnken design with 17 Runs were studied. Results showed that increasing of cheese whey percentage and Walne culture medium caused to increase cell density but it was not statistically significant ($p > 0.05$). Increasing of the Walne culture medium led to increasing chlorophyll and carotenoids and showed a significant difference ($p < 0.05$). The cell density and the amount of chlorophyll and carotenoids decreased gradually with increasing incubation time, however, there was no significant difference observed in the levels of chlorophyll and carotenoids ($p > 0.05$). Significant differences were observed between the different treatments in producing cell density ($p < 0.05$). The protein content was significantly increased with increasing of cheese whey percentage and incubation period up to 7th ($p < 0.05$). Also, increasing in Walne culture medium concentration resulted in increasing the protein content until day 7 of the incubation period and decreased (from day 9 onwards) over time and reached its lowest level on day 14 but no significant differences was detected through the period ($p > 0.05$). Optimum conditions were obtained on day 5 of incubation, 5 percent of cheese whey and zero percent of the Walne culture medium. In the mentioned condition the amount of cell density, protein and carotenoid was 2.74×10^7 , 288.75 mg/kg, 0.202 mg/ml respectively.

Keywords: *Dunaliella salina*, Cheese whey, Walne medium, Biomass, Chlorophyll

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