



University of Zabol

Graduate School

Faculty of Natural Resources

Department of Fisheries

**The Thesis Submitted for the Degree of master of Science In the field of
Fisheries Science**

Title:

**Investigation of quantitative and qualitative of *Chlorella vulgaris* growth in deep
ground water of Sistan.**

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Abstract

In this study the quantitative and qualitative investigation of the microalgae growth of *Chlorella vulgaris* in Gillard culture medium and deep water of sistan region is discussed. This experiment was conducted with 5 treatments (treatment 1: 100% culture medium. Treatment 2: 25% deep water. Treatment 3: 50% deep water. Treatment 4: 75% deep water. Treatment 5: 100% deep water) and 3 repetitions during the duration of 10 days. It was done at a temperature of 27 degrees Celsius and 3500 lux lighting and continuous aeration in 500 ml containers. The results of this experiment showed that pH in the deep water treatments started from 8.89 and reached 10.63. In addition, all the treatments had growth compared to the first day of the experiment (density of 15×10^4 cells per milliliter) until the 5th day of the experiment and after that they have taken a downward growth trend. The results showed that among the treatment 2(25% deep water) had the lowest growth of 22.5×10^4 cells per ml and treatment 5(100% deep water) with a density of $129/33 \times 10^4$ cells per ml compared to the rest of the treatments has grown more. The highest and lowest specific growth rate (SGR) on the last day are for treatment 5(100% deep water) and 4(75% deep water) respectively. Also the highest and lowest doubling time(DT)is for treatment 2(25% deep water) and 1(100% culture medium),respectively. Also the highest and lowest biomass is respectively for treatment 5(100% deep water) and 3(50% deep water), the highest and lowest amount of chlorophyll a is respectively for treatments 2(25 % deep water) on the fifth day and 2(25% deep water) on the last day. Therefore according to the results of this study it can be said that the cultivation of *Chlorella vulgaris* algae in deep water is possible.

Keywords: : *Chlorella vulgaris* ,Growth,Chlorophyll ,Deep ground water of Sistan