



## ORGANIC LOAD REMOVAL OF CHEESE WHEY IN A PHOTOBIOREACTOR OF ROTATING DISKS WITH *SPIRULINA PLATENSIS*

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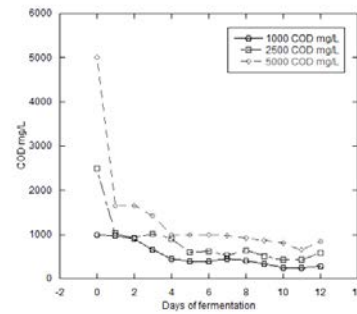
**Key words:** Photobioreactor, *Spirulina platensis*, Cheese Whey

**Introduction.** Photobioreactors can be used in treatment of industrial effluents having controlled parameters such as temperature, pH, light and other factors that may influence the development of the process. The whey from the cheese industry / dairy industry has a low value and high value added organic load that varies between 70,000 and 80,000 COD mg/L consisting of milk and milk products [1]. The microalga *Spirulina platensis* is a filamentous cyanobacteria belonging to; live in alkaline soils and lakes as [2].

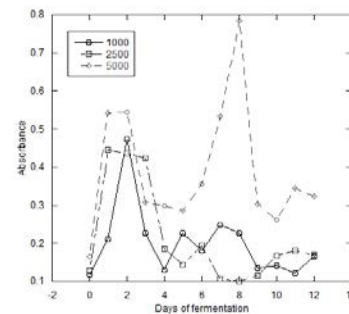
**Objective.** To remove the organic load of cheese whey using *Spirulina platensis*

**Methods.** Preparation of inoculum of *Spirulina platensis* was used as culture medium Schlösser the standard solution [3]. The microalga was inoculated to 10% in 500 mL Erlenmeyer flasks with 200 mL of standard culture medium, placed on an orbital shaker at 100 rpm, room temperature and illumination of 3000 lux with 12h photoperiod (light / dark). Subsequently, was added 10% inoculum in a rotary disc photobioreactor 2000 mL at an initial concentration of 1000 COD mg/L, 2500 COD mg/L and 5000 COD mg/L of whey, with photoperiods 12h (light / dark). Parameters were analyzed for pH, absorbance and chemical oxygen demand, following the methodology described by APHA [4].

**Results.** In Figure 1 and 2 in concentration of 1000 COD mg/L is obtained a reduction of 80% of the initial organic load and an increase in biomass of 40%. The concentration 2500 COD mg/L showed a 83% reduction of organic load and a 31% increase in absorbance. For cultivation with concentration 5000 COD mg/L was observed a decrease in COD of 88%, an increase in biomass of 97%. The pH was maintained at 9.5 without correction.



**Fig.1** Reduction of COD (COD mg/L) in a period of 12 days of fermentation at concentrations of 1000, 2500 and 5000 mg/L.



**Fig. 2** Increased absorbance over a period of 12 days of fermentation at concentrations of 1000, 2500 and 5000 mg/L.

**Conclusions.** The *Spirulina platensis* has demonstrated high performance in the removal of the organic load of cheese whey.

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