Extended Abstract

Bioactive Compounds Obtained by Treating Dairy Wastewaters with *Porphyridium purpureum*[†]

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Annually, 11 million tons of dairy wastewaters are released into the environment worldwide. Over recent decades, cheese whey has been considered the most important pollutant of the dairy industry, associated with serious environmental hazards if sustainable treatments are not applied. As a result, several studies have been conducted in order to develop alternative methods for cheese whey valorization [1].

The purpose of this work was to study the effect of growing microalgae on dairy wastewater. The microalgae strain chosen was *Porphyridium purpureum*. The growth medium (specifically Artificial seawater - ASW) was prepared through the addition of salts that comprise the ASW medium in deproteinized cheese whey, used as carbon source. Experiments were carried out with samples of increasing concentrations of cheese whey, calculated as amount of lactose (0, 2.5, 5, 7.5, 10 g/L)-Figure 1. The effects of growing microalgae in cheese whey medium were observed by monitoring the growth curves, biomass productivity after 10 days of growth, and pigment concentration in the dry biomass, specifically chlorophylls and carotenoids, as well as phycobiliproteins.

Cultivation of the *Porphyridium purpureum* microalgae strain on dairy wastewaters—cheese whey—resulted in an increase in the production of exopolysaccharides in the growth medium, proportional to the amount of lactose present. The analysis of the growth medium shows that the microalgae consumed the lactose present almost completely, with small amounts being found in the samples of higher concentrations at the end of the cultivation process.

Figure 1. Cultivation of *Porphyridium purpureum* microalgae strain on dairy wastewaters—samples of increasing concentrations of lactose (0, 2.5, 5, 7.5, 10 g/L).

Continuous work will focus on the extraction, characterization, and quantification of the bioactive components present in the microalgae strain. Preliminary results suggest this is a viable route for valorization of whey present in dairy wastes, which are purified through microalgae growth.

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