Optimization of flocculation coagulation for the recovery of microalgae from a high-yield algal channel

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Abstract
For several years, the integrated high-efficiency anaerobic reactor-algal channel system has been researched by various teams. The objectives come together, optimize this process for application in water-scarcity countries, when the climate allows it. This system offers in addition to the purification of its wastewater, the production of a valued algal biomass. Thus the purified effluent is rich with a certain algal concentration. A separation of micro-algae and purified effluent is a stage of treatment that should be provided in this type of station, in order to reuse this water in irrigation or watering green areas.
In this perspective, our research focused mainly on optimizing the recovery of microalgae by coagulation flocculation. The coagulant used is alumina sulphate $AL_2 (SO_4)_3$ because of its cost, indeed it is the cheapest of the trivalents. However, it has disadvantages such as aluminum residues. Tthis work aims to :
- Determination of optimal coagulant dose and optimal pH conditions
- Optimization of the flocculation and settling time

Key words : High yield algal channel; microalgae; coagulation flocculation; jar test; alumina sulphate