

Preliminary study on zeolite 13X as a potential carrier for algal immobilization

ABSTRACT

Immobilization of microalgae in polymers can overcome problems associated with biomass harvesting from suspended free cells cultivated in wastewater. Although various carriers have been applied for microalgae immobilization (e.g. natural such as alginate and synthetic such as polyacrylamide), problems such as low stability, toxicity and high cost still remain a challenge for the method to be commercialized. In the present study, an effective carrier (zeolite molecular sieves 13X) has been used for the immobilization of green microalgae, *Chlorella vulgaris*. The immobilization was done by suspending microalgae in a culture medium with different pHs (ranging from 5-9) along with zeolite 13X. Scanning electron microscope (SEM) was used to observe the morphology of the cells adsorbed onto the carrier after the immobilization process. It was found that higher microalgal immobilization occurred in the medium with an acidic condition (pH=5) compared to other pHs. This indicates that zeolite 13X is capable to be a potential support for the immobilization of *Chlorella vulgaris*. Furthermore, zeolite-immobilized *Chlorella* can be applied in different applications such as wastewater treatment and biofuel production.

Keyword: Zeolite 13; *Chlorella vulgaris*; Immobilization