Yang Liu

Finding a Method for Selective Algae Flocculation

This experiment tests the effectiveness of using SDS to selectively separate flocculated algae. Three species of algae were used for this experiment: Anabaena, Scenedesmus, and Chlorella. These algae were contained in three separate water bottles. For testing, 10mL of each species was transferred to three separate test tubes. 0.30mmol of each chemical flocculent: ferric chloride (FeCl3), aluminum sulfate (Al(SO4)3), or ferric sulfate (Fe(SO4)3) was added. The effects of the flocculants were observed through a microscope; clumping, occurred in all three cases, but the rate of settling before and after the induction of the flocculants was identical. The flocculants behaved similarly so only aluminum sulfate was used in later tests. The experiment was repeated with all three species in a single test tube. The flocculants clump the algae together by neutralizing the slightly negative charge on alga cell surfaces; this effect was reversed by adding sodium dodecyl sulfate (SDS) to the system. After flocculation, this chemical was added in an attempt to return the negative charge on the algae surface. The chemical reduced the size of the clumps and increased the settling time, however it had no effect on the number of clumps. Adding SDS inhibited the growth of all the species of algae and is a poor method of separating clumps of algae. The results suggest that using SDS does not separate the algae cells without harming them.