Biodegradable Plastic from Gelidium pusillum

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Seaweed has been used for a long time as a source of food, animal fodder, medicine, in cosmetic products, and textile etc. As the demand for organic products is increasing every day, this project manifests the production of biodegradable plastic from red seaweed Gelidium pusillum which serves as a good feedstock for production of bio plastic. In this study, red seaweed Gelidium pusillum from Karachi coast was collected and its phycocolloidal extract was utilized to make bio plastic which is environment friendly and biodegradable. For experiment, red seaweed, Gelidium pusillum was collected. The collected specie was washed immediately in laboratory in order to remove epiphytes and dust particles and left to be dried under shade. Then agar was extracted from partially dried seaweed by taking ratio of 3 part seaweed and 1 part water by heating the mixture on medium flame. After 30 minutes of heating a gummy substance was obtained called Agar. For preparation of plastic 200 ml water, 0.5 gm agar, 2.5 gm starch, 2 gm sorbitol and 100 gm glycerol were used. All the ingredients were mixed and stirred well, stirring continued throughout the procedure in order to prevent clumps in the solution and the mixture was heated at 85 – 90 degree centigrade till it started to froth. When bubbles appeared the mixture was removed from flame while stirring still continued. When the mixture became gummy, mixture was poured into drying pan and left to dry for 2 to 3 days. When the mixture was completely dried, an environmental friendly plastic was obtained. Universal Testing Machine was used to calculate tensile property of the film. Moreover, it was observed that the strength and elongation of the plastic obtained by utilizing Gelidium pusillum was better than conventional plastics.

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