Isolation and identification of marine diatoms based on frustules morphology using scanning electron microscopy

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Diatoms are widely dispersed single-celled eukaryotic microalgal species inhabiting every kind of aquatic ecosystem. Identification and isolation of diatoms have been the need of the hour for the sustainable development of environmental goals. The current study focuses on the isolation of various diatoms from the southern coastal region of Dhanushkodi, Rameshwaram and Mandapam in the Ramanathapuram district of Tamil Nadu, India, and their identification using scanning electron microscopy (SEM). The species were determined based on the girdle, striae, valves, and other crucial terms present on the frustules and identified as pennate diatoms *Navicula* sp., *Amphora* sp., and *Gomphonema* sp., respectively. The identified species were cultured in artificial saltwater that had been enhanced with a modified f/2-Si media composition. In addition to enhancing the local flora, the identified strains represent the diatoms diversity along India's southern coast.

Keywords: Bacillariophyceae, Diatom, Frustules, Heterokont. Silica nanostructure.