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Characteristics of organic carbon and organic nitrogen during degradation in coral mucus of *Acropora digitifera*

M F M Fairoz*
Ocean University of Sri Lanka, Division of Fisheries and Marine Sciences,
National Institute of Fisheries and Nautical Engineering (NIFNE)
15, Crow Island, Colombo 15

Dissolved organic carbon (DOC) and dissolved organic nitrogen (DON) in sea water play a key role in supporting the microbial food web on the reef environment. However, the relationship between DOC, DON, microbial activity, and macro-organisms in the reef environment is not well understood. Temporal patterns in DOC, DON, and microbial abundances in water column were first studied on the fringing reef of Sesoko Island (Okinawa, Japan) in 2008 and some important trends related to DOC, DON have been observed. The present study discusses the linkage to coal mucus in organic matter cycling in a fringing reef using mucus samples obtained from *Acropora digitifera.* Chemical characteristics of organic matter contained in coral mucus during degradation were not well documented, which might be due to practical difficulties of mucus sample collection and its rapid turnover time in coral reef waters.Coral mucus (compounds belong to different molecular weight and solubility in sea water) is primarily a carbohydrate complex, but also contains energy-rich lipid compounds like wax esters, triglycerids, free fatty and proteins or peptides. The results showed that changes of molecular weight (Gel electrophoresis) and concentrations of organic compounds occur in mucus during degradation (2 days). The migration pattern of gel electrophoresis for coral mucus samples showed that the initial samples contain a higher (greater than 200 kDa) molecular weight or insoluble fraction, and a lower molecular weight (less than 200 kDa) or soluble fraction, suggesting that the solubility of coral mucus in sea water might affect the concentration of DON with relation to DOC in the water column. These results could explain the DOC and DON concentrations in the water column of a shallow reef. Some of the techniques used in this study would be useful to integrate with future research work on coral mucus degradation.

fairoz.mfm@gmail.com Tel: 047 4929635