

## The role of coral mucus in the material cycle in reef ecosystems

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It is well known that corals release transparent and mucoid organic matter (coral mucus) to the ambient seawater. This mucus release is important for various physiological functions of corals such as defense against stress, particle trap and cellular metabolic regulation. Coral mucus is mainly composed of carbohydrates, proteins and lipids, of which most are dissolved organic matter and thus utilized by heterotrophic bacteria and incorporated into the microbial loop. A fraction of the mucus, with its high molecular weight and sticky properties, captures large amounts of particulate organic matter in the seawater, forming large organic aggregates which are efficiently assimilated into higher trophic levels. Thus, coral mucus is incorporated into reef organisms in a variety of processes and functions as an important organic energy source in reef systems. This paper reviews some types of mucus forms, chemical composition and production rates of mucus, and the contribution of mucus to material recycling and heterotrophs from biogeochemical and ecological perspectives and the possible loss of reef biogeochemical processes and functions by ecosystem degradation due to global climate change and anthropogenic impact.

Keywords: Scleractinian corals, mucus, zooxanthellae, bacterial degradation, particle trap, trophic structure