

Fungal Mucilage

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That gunky, slime oozing from the rotten fruit contains microbes and mucilage. In general terms, mucilage is simply a carrier, a protectant and a source of nutrients. Mucilage may be produced by plants, animals and microbes. Thus the slime from the rotten fruit may have components that come from the plant and the microbes.

Our research group has commenced study of mucilage produced by fungi. We will probably call the mucilage something else. Mucus is a glycoprotein formed in glands of animals, so we will avoid mucilage. Biofilm is a word used in different circumstances. Strictly speaking biofilm is an adhesive material enclosing colonies of microbes. Slime layer is also used. Slime layer implies a surface, and our work is interested in both the surface and the interior. The precise term has not yet appeared, and we would like to hear your suggestions.

Interestingly, mucilage is thought to be primarily a polysaccharide, like starch. The polysaccharide holds water in a lattice-like 3D structure. It will also hold other molecules. We are interested in mucilage holding the more complex polyphenolics like melanin. Melanin is a hugely complex group of compounds that are resistant to degradation and we think they are likely to be long-lived sources of organic carbon in soil.

The current hypothesis we are examining is that soil particles will hold organic carbon for a long time if we can increase the quantity of melanin or any other polyphenolic inside each aggregate, and if we can coat the aggregate in a layer of mucilage. The melanin will be naturally long-lived, and the life will be increased because the mucilaginous layer will slow entry of oxygen to the soil aggregate.