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Sodium Alginate Hydrogel with Crosslinking

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We use this protocol and it's working

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Abstract

Instructions for how to make cyanobacteria/algae based sodium alginate based hydrogel

Guidelines

Be careful when pouring boiling hot water, carrying your mug of tea, and ensure it has cooled a bit before you drink it.

Materials

Water, Water kettle, Your favourite mug, PG Tips English teabags, Skimmed (0%) milk, Spoon, McVities Digestive biscuit.



Prepare and Weigh the Raw Materials

- 1 Weigh 2.4g sodium alginate, 2.6g methylcellulose, 45 ml of DI water, 0.1M calcium chloride spray (1.1g CaCl_2 powder dissolved in 100ml DI water).

Mixing Materials

- 2 Mix sodium alginate, methylcellulose, and DI water in a beaker until most of the large particles are dissolved.
- 2.1 It is a bit tricky to mix all of the material at once. It could be easier to add the dry powders first and DI water portion by portion to mix all material in a gelatinous consistency. Use an overhead mixer if making a large portion of the gel.

Wait for Material Gelling

- 3 Seal the material mix on the side for 30 minutes.

Add Algae/Cyanobacteria in the Hydrogel

- 4 Add 1% of microbial culture in the hydrogel with a spatula. Mix the culture and hydrogel well into a homogeneous culture.
- 5 Use the microbial hydrogel in applications like biophotovoltaics or engineered living materials.

Ready to Use

- 6 Depends on uses, crosslink the alginate material by spraying with a 0.1M CaCl_2 mist on the top surface or soaking it in a 0.1M CaCl_2 bath for cross surface crosslinking effect.