

Medium scale culture of micro-algae in plastic bags

PREAMBLE: Using large polythene bags allows production of short term, large volume cultures.

The water is not autoclaved, but sterilised by treatment with hypochlorite then neutralised with thiosulphate. After culturing for more than 3-4 weeks, in our experience cyanobacterial contaminants often invade the bags and they then have to be destroyed. Contaminants can get into the system via the air supply, or possibly survive in small numbers following bleaching. Use seawater which is filtered and treated with UV.

Polythene tubing is cut to a suitable length and is sealed carefully at one end. The open end is tied to a rig structure as in the photograph. Openings can be introduced by inserting sterile glass Pasteur pipettes into the bag with a tube and clamp attached.



The first step is to add around 2 litres of water to check if the bag leaks. If it is sealed the bag should be filled with the required volume of water then the bleach added (10ml per 10 litres water). Also, at this stage the air supply should be inserted into the bag (via Pasteur pipette) so that it can also be sterilised.

After 48 hours neutralise with thiosulphate (2.5 mls of 20% w/v stock solution of sodium thiosulphate per 10 litres water) and add the sterile nutrients. Leave again for a few hours to thoroughly mix, then the starter culture can be added.

Note that using narrow tubing will increase the access to light and as a result will give faster productivity.

With care the bag can be used for up to 12 weeks without contamination.

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Apparatus: Roll of polythene tubing illuminated constant temperature room with a frame to support plastic bag.

Culture media: filtered seawater or deionised water. Concentrated nutrients such as Walne's, f/2 or 3NBBM+V (all at www.ccap.ac.uk/media/pdfrecipes).

Algae: Require around 1 litre of dense inoculum of a healthy micro-algal culture.