Pasteurized Seawater Recipe

Directions

Most salt-water media used by UTEX includes natural seawater collected off-shore from Port Aransas, Texas in the Gulf of Mexico. Seawater having a salinity of at least 30 ppt is collected and pre-filtered, then stored undisturbed within polyethylene carboys at ambient temperature.

Seawater is diluted to 30 ppt with double distilled water immediately prior to pasteurization. A three-liter batch of seawater at 30 ppt in a 4-liter Erlenmeyer flask is covered with a small inverted glass petri plate and an inverted 250-ml beaker, then "pasteurized" in a steamer for 45 minutes. The pasteurized content of the flask is allowed to cool and left undisturbed at ambient temperature for approximately 24 hr. It is then again steam-pasteurized for 45 min., as on the previous day. After the flask cools the second time, the inverted-petri-plate lid is sealed in place with Parafilm and the flask is stored at refrigerator temperature until it is used to prepare culture medium. This pasteurized seawater may used immediately or may be stored for several months prior to use.

Procedure:
In various laboratories marine algae are cultured in media prepared from "pasteurized" seawater that is assumed to be heated to exactly 73 degrees C. The procedure described here heats 3-L batches of seawater to over 95 degrees C for two consecutive days, although it does not reach boiling temperature.

This procedure generally does not cause precipitation of seawater, although excessive agitation of flasks, the use of scratched or etched flasks, or pasteurization of seawater at higher salinity may result in salt precipitation during heating.

Pasteurized seawater prepared as described above appears to be nearly sterile, although it is not used to culture axenic UTEX cultures without further heating in agar. Liquid unialgal cultures grown in media prepared from seawater that has been pasteurized by this method can be sub-cultured for many years without the introduction of invasive contamination.