Chapman Stone Agar

M215

Chapman Stone Agar is recommended for the selective isolation of Staphylococci causing food poisoning.

Composition**

Ingredients	Gms / Litre
Casein enzymic hydrolysate	10.000
Yeast extract	2.500
Gelatin	30.000
D-Mannitol	10.000
Sodium chloride	55.000
Ammonium sulphate	75.000
Dipotassium phosphate	5.000
Agar	15.000
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 20.25 grams in 100 ml distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 10 minutes. Mix well and pour into sterile Petri plates.

Principle And Interpretation

Staphylococcus aureus is one of the pathogens most frequently isolated from clinical specimens. In fact, *S. aureus* is currently the most common cause of nosocomial infections (1). Treatment of infection caused by *S. aureus* has become more problematic since the development of multiple drug resistant strains. To identify *S. aureus* from contaminated samples more easily and reliably, selective media have been developed.

Chapman Stone Agar is a selective media used for the isolation of food poisoning staphylococci. Foods commonly contaminated with *S. aureus* included synthetic creams, custards and high-salted food.

Chapman Stone Agar is prepared according to the modification of Staphylococcus Medium 110 described by Chapman (1). It is similar to Staphylococcus Medium 110, previously described by Chapman (2), except that the sodium chloride concentration is reduced to 5.5% and additionally ammonium sulfate is included in the formulation. The main modification consists the inclusion of ammonium sulfate in the medium that allows the direct observation of gelatin hydrolysis, instead of adding reagents to the plate medium. Chapman Stone Medium is especially recommended for suspected food poisoning studies involving *Staphylococcus* (3). It is selective, due to the relatively high salt content, and is differential due to pigmentation, mannitol fermentation and the presence or absence of gelatin liquefaction.

Casein enzymic hydrolysate, yeast extract provide nitrogen, carbon, sulphur, vitamin B and trace elements. Sodium chloride acts as a selective agent, which inhibits most of the bacterial species. Mannitol is the fermentable carbohydrate and its fermentation can be detected by adding a few drops of bromocresol purple resulting in production of yellow colour. Gelatin hydrolysis is observed as clear zones around colonies. Due to the presence of ammonium sulphate in the medium itself there is no need to flood the plate with ammonium sulphate solution for detection of gelatin liquefaction by the isolates, which is known as Stones method (3). Dipotassium phosphate provides buffering capability. Material under test is inoculated on the surface and incubated at 30°C for 48 hours to produce separated colonies. After incubation, cream to golden yellow colonies surrounded by clear zones are presumptively identified as *S. aureus* . White or non-pigmented colonies, with or without a clear zone, are presumptively identified as *S. epidermidis* . Coagulase activity should be performed to confirm the findings.

Enterococci and/or Group D streptococci may exhibit growth on the medium and show slight mannitol fermentation. The colonies, however, are tiny and can easily be differentiated from staphylococci by gram stain and the catalase test (4).

Quality Control

Appearance
Cream to yellow coarse free flowing powder

Gelling
Firm, comparable with 1.5% Agar gel and 3.0% Gelatin gel

Colour and Clarity of prepared medium
Light amber coloured, opalescent gel forms in Petri plates

Reaction
Reaction of 20.25% w/v aqueous solution at 25°C. pH : 7.0±0.2

pH
6.80-7.20

Cultural Response
M215: Cultural characteristics observed after an incubation at 25 - 30°C for 18 - 48 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Mannitol fermentation	Gelatinase production
Cultural Response					
Escherichia coli ATCC 25922	>=10^3	inhibited	0%		
Staphylococcus aureus ATCC 25923	50-100	luxuriant	>=50%	positive reaction, production of yellow colour on addition of Bromo cresol purple	positive reaction, clearing or halo
Staphylococcus epidermidis ATCC 12228	50-100	luxuriant	>=50%	negative reaction, no production of yellow colour on addition of Bromo cresol purple	positive reaction, clearing or halo

Storage and Shelf Life

Store below 30°C in tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label.

Reference

1. Chapman G. H., 1949, J. Bacteriol., 58:823
2. Chapman G. H., 1948, Food Res., 13:100.
3. Stone, 1935, Proc. Soc. Exp. Biol. N.Y., 33:185.
4. MacFaddin J. F., 1985, Media for Isolation-Cultivation-Identification -Maintenance of Medical Bacteria, Vol. I, Williams and Wilkins, Baltimore

Revision : 2 / 2015