McClung Toabe Agar Base

M387

McClung Toabe Agar is used for detection and isolation of *Clostridium perfringens* from food samples.

Composition**

Ingredients	Gms / Litre
Proteose peptone	40.000
Dextrose	2.000
Disodium hydrogen phosphate	5.000
Monopotassium phosphate	1.000
Sodium chloride	2.000
Magnesium sulphate	0.100
Agar	25.000
Final pH (at 25°C)	7.6±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 75.1 grams in 900 ml distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 20 minutes. Cool to 50°C and aseptically add 100 ml of sterile Egg Yolk Emulsion (FD045). Mix well and pour into sterile Petri plates.

Principle And Interpretation

Clostridium perfringens food poisoning is one of the most common types of human foodborne illness. The foods usually involved are cooked meat or poultry products containing large number of viable cells. A heat-labile enterotoxin produced only by sporulating cells induces the major symptoms of diarrhea in perfringens poisoning. Although the enterotoxin is not preformed in the food, the foods in which conditions are favourable for sporulation may contain enterotoxin (1). Therefore, enumeration of these microorganisms in food plays a significant role in investigation of food borne illness (2).

McClung and Toabe (3, 4, 5) formulated a medium for isolating and differentiating *Clostridium* species from foods on the basis of their lecithinase and lipase activity. With the addition of 50% egg yolk emulsion, *C. perfringens* and a few other *Clostridium* species show the lecithinase reaction. Lecithinase enzyme lyses egg yolk lecithin, producing an opaque zone of precipitation surrounding the slightly raised colonies. Proteose peptone provides nitrogenous growth nutrients. Dextrose is the fermentable carbohydrate. Phosphates form a good buffering system. Sodium chloride provides essential ions. Magnesium sulphate provides divalent cations and sulphate.

Add 25 grams of food sample to be tested in two tubes containing 25 ml Fluid Thioglycollate Medium (M009) with inverted Durhams tube. Incubation is carried out at 46°C for 4-6 hours. Observe for growth and gas production. Streak the presumptive *C. perfringens* on McClung Toabe Agar plates and incubate at 35-37°C for 18-24 hours.

Quality Control

Appearance
Cream to yellow homogeneous free flowing powder

Gelling
Firm, comparable with 2.5% Agar gel.

Colour and Clarity of prepared medium
Basal medium : Amber coloured clear to slightly opalescent gel.After addition of egg yolk emlusion : Yellow coloured opalescent gel forms in Petri plates.

Reaction
Reaction of 7.5% w/v aqueous solution at 25°C. pH : 7.6±0.2

pH
7.40-7.80

Cultural Response

M387: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours under anaerobic condition with added sterile Egg Yolk Emulsion (FD045).

Organism	Inoculum (CFU)	Growth	Recovery	Lecithinase	Lipase activity
Clostridium perfringens ATCC 12919	50-100	luxuriant	>=70%	positive reaction, opaque zone around the colony	negative reaction, no irridescent sheen on the growth surface
Clostridium sporogenes ATCC 11437	50-100	luxuriant	>=70%	negative reaction	positive reaction, irridescent sheen on the growth surface
Staphylococcus aureus ATCC 25923	50-100	luxuriant	>=70%	positive reaction, opaque zone around the colony	positive reaction, irridescent sheen on the growth surface

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. Downes F. P. and Ito K. (Eds.), 2001, Compendium of Methods For The Microbiological Examination of Foods, 4th ed., APHA, Washington, D.C.
2. FDA Bacteriological Analytical Manual, 2005, 18th Ed., AOAC, Washington, DC.
3. McClung L. S. and Toabe R., 1947, J. Bact., 53:139.
4. McClung L. S. and Toabe R., 1964, Public Health Service Publication No. 1142.
5. McClung L. S. and Toabe R., 1968, Laboratory Manual for Food Canners and Processors, Vol. 1, Pg. 25.

Revision : 2 / 2015