APT Agar (All Purpose Tween)

Cat. 2049

For enumeration and cultivation of heterofermentative lactic acid bacteria including lactobacilli, Leuconostocs and lactic acid streptococci.

Practical information

Aplications	Categories
Selective enumeration	Lactic acid bacteria

Industry: Food

Principles and uses

APT Agar was formulated by Deibel, Evans and Niven when they were investigating thiamine requiring bacteria and heterofermentative lactobacilli. Lactobacillus forms a major part of lactic acid bacteria group which are abundant in nature. They convert lactose and other sugars to lactic acid and therefore are named as Lactobacillus. This media is recommended for the microbiological examination of canned meat, poultry, sauerkraut and other food. APT Agar is also used in the microbiological assay of thiamine.

APT Agar contains peptone mixture, which acts as a source of carbon, nitrogen, vitamins and minerals. Yeast extract provides vitamin and B-complex nutrients, which is required for the growth of bacteria. Dextrose is the carbohydrate source. Manganese chloride, magnesium sulphate and ferrous sulphate are essential for the replication of lactobacilli and lactic acid streptococci. Polysorbate 80 is a source of fatty acids required by lactobacilli. Sodium citrate partially inhibits the growth of Gram negative bacteria.

Formula in g/L

Bacteriological agar	13,5	D(+) Glucose	10
Ferrous sulfate	0,004	Magnesium sulfate	0,8
Manganese (II) chloride	0,14	Peptone	12,5
Sodium chloride	5	Sodium citrate	5
Thiamine hydrochloride	0,001	Yeast extract	7,5
Potassium hydrogen phosphate	5		

Preparation

Suspend 59,5 grams of the medium in 1 liter of distilled water. Add 0,1 grams of cicloheximide dissolved in a minimum amount of 40% ethanol, and 0,2 ml Tween 80. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. Sterilize by autoclaving at 121°C for 15 minutes.

Instructions for use

*For enumeration:
-Dilute the sample material and inoculate the APT Agar by the pour-plate method.
-Incubate for 1-2 days at 35°C aerobically.

* For identification:
-Inoculate with the suspect colonies to identify the bacteria that cause greening of meat products. Transfer a sample from the culture onto the cut surface of a smoked sausage.
-Place the sausage in a petri dish containing a wet piece of filter paper ("moist chamber").
- Incubate for 18-24 hours at 32°C and observe if there is a green coloration.
-A sample of the sausage which has not been inoculated serves as a control.
-In order to exclude other pigment-forming bacteria (e.g. Pseudomonas), a verifying test (e.g. Gram-positive test, negative catalase test, negative nitratase test, positive peroxidase test, acetoin production from glucose, ammonia production from arginine, etc.) should be performed.

Quality control

Solubility	Appareance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25ºC)

w/o rests	Fine powder	Beige	Amber slightly opalescent	6,7 ± 0,2

Microbiological test

Incubation conditions: (35 ºC/ 18-24 h)

Microorganisms	Specification
Lactococcus lactis ssp. lactis ATCC 19435	Good growth
Lactobacillus casei ATCC 393	Good growth
Lactobacillus acidophilus ATCC 4356	Good growth
Lactobacillus plantarum ATCC 8014	Good growth
Lactobacillus fermentum ATCC 9338	Good growth
Lactobacillus rhamnosus ATCC 9595	Good growth

Storage

Temp. Min.:2 ºC
Temp. Max.:25 ºC

Bibliography

Evans and Niven, 1951, J. Bact., 62:599.

Downes F. P. and Ito K. (Eds.), 2001, Compendium of Methods for the Microbiological Examination of Foods, 4th ed., APHA, Washington D.C.

J.B. Evans and C.F. Niven, Nutrition of the heterofermentative Lactobacilli that cause greening of cured meat products, J. Bact., 62, 599 (1951)