17153 LS Differential Agar
(Lactobacillus Streptococcus Differential Agar)

For the maximum growth and differentiation of Lactobacilli and Streptococci on the basis of colonial morphology, T.T.C. reduction and casein reaction.

Composition:

Ingredients	Grams/Litre
Casein enzymic hydrolysate	10.0
Papaic digest of soybean meal	5.0
Beef extract	5.0
Yeast extract	5.0
Dextrose	20.0
Sodium chloride	5.0
L-Cysteine hydrochloride	0.3
Agar	15.0

Final pH 6.1 +/- 0.2 at 25°C

Store prepared media below 8°C, protected from direct light. Store dehydrated powder, in a dry place, in
tightly-sealed containers at 2-25°C.

Appearance:	Faintly beige, homogeneous, free flowing powder.
Gelling:	Firm.
Colour and Clarity:	Light brownish-yellow coloured, clear gel forms in petri plates.

Directions:
Suspend 65.3 g in 1 litre distilled water. Boil to dissolve the medium completely. Sterilize by autoclaving at 121°C for 15 minutes. Cool to 50°C and add the following sterile solutions previously kept warm at 50°C just prior to use;

1. 100 ml of 10% (w/v) aqueous solution of antibiotic free skim milk powder (Prod No. 70166) sterilized at 121°C for 5 minutes.
2. 10 ml of TTC Solution (Prod 17779). Mix well and pour into sterile petri plates.

Principle and Interpretation:
This medium is used to differentiate Lactobacillus and Streptococcus. It is prepared according to the formulation of Eloy and Lacrosse [4]. The selective medium supports the growth and the differentiation of thermophilic lactobacilli and streptococci in yoghurt products (5). Yoghurt is in produced from milk which is then in most cases fermented by a 1:1 mixture of *Streptococcus thermophillus* and *Lactobacillus bulgaricus*. The mixture of these two bacteria has shown symbiotic effects [1, 2, 3].
The medium contains casein hydrolysate, L-cysteine, papaic digest of soyabean meal, beef extract and yeast extract as sources of carbon, nitrogen, vitamins and minerals. Sodium chloride maintains the osmotic balance and dextrose is the fermentable sugar. The triphenyl tetrazolium chloride (TTC), present in the supplement, gives based on a reduction a red colour complex. The TTC reaction in connection with the casein reaction allows differentiation between Lactobacillus and Streptococcus species by means of colony morphology (6).
Test samples of yoghurt or starter cultures are added to melted and cooled LS Differential Agar. These are mixed thoroughly and plates are poured. The plates are incubated at 43°C for 48 hours.

Cultural characteristics after 48 hours at 43-45°C (under anaerobic conditions).

Organisms (ATCC)	Growth	Colony Appearance	Casein Reaction
Lactobacillus bulgaricus (11842)	+++	red rhizoidal	opaque zone
Streptococcus thermophillus (14485)	+++	red smooth	clear zone

References:

1. J.W. Pette, H. Lolkema, Neth. Milk Dairy J., 4:261 (1950)
2. P. Stocklin, Cultured Dairy Prod. J., 4 (3), 6 (1969)
3. R.L. Sellars, F.J. Babel, Cultures for the Manufacture of Dairy Products, Chr. Hansenss Laboratory, Inc., Milwankee, Wis. (1970)
4. C. Eloy, R. Lacrosse, Bull. Rech. Agron Gembloux,11(1-2):83 (1976)
5. G. Revter, Int. J. Food Microbiol., 2, 55-68 (1985)
6. J.E.L. Corry, G.D.W. Curtis, R.M. Baird, Culture Media for Food Microbiology, Vol. 34, Progress in Industrial Microbiology, Elsevier, Amsterdam (1995)

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.