AuSaMicS™ Life Science

TECHNICAL DATA SHEET
TDS-AS-1284 | Rev. 1.0
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MacConkey Agar with Sorbitol

Catalog No. AS-1284 | Dehydrated Culture Medium

For Laboratory Use Only — Not for Human or Veterinary Use

1. Product Identification

Product Name	MacConkey Agar with Sorbitol
Catalog Number	AS-1284
Category	Dehydrated Selective & Differential Culture Medium
Synonyms	Sorbitol MacConkey Agar; SMAC Agar
Grade	Microbiological / Laboratory Reagent Grade
Physical Form	Homogeneous light beige to pink powder
Pack Sizes	100 g, 500 g, 2.5 kg
Supplier	AuSaMicS Pty Ltd
Address	31 Longview CT, Thomastown VIC 3074, Australia
ABN	56 676 640 467
Phone	+61 412 520 598
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Website	www.ausamics.com.au

2. Composition

Ingredient	Function	Approx. g/L (prepared medium)
Peptic digest of animal tissue	Nitrogen and nutrient source	17.0
Sorbitol	Fermentable carbohydrate (replaces lactose)	10.0
Pancreatic digest of casein	Nitrogen source	1.5

Bile salts mixture	Selective agent — inhibits Gram-positive organisms	1.5
Sodium chloride (NaCl)	Osmotic balance	5.0
Crystal violet	Selective agent — inhibits Gram-positive organisms	0.001
Neutral red	pH indicator (acid production detection)	0.03
Agar	Solidifying agent	13.5

Approximate formula per litre of prepared medium: 48.5 g of dehydrated powder dissolved in 1 L of purified water.
Final pH: 7.1 ± 0.2 at 25 °C

3. Principle of the Test

MacConkey Agar with Sorbitol is a selective and differential medium used for the isolation and identification of Enterobacteriaceae, with particular emphasis on the detection of pathogenic Escherichia coli O157:H7.

Selectivity: Bile salts and crystal violet inhibit the growth of Gram-positive organisms, allowing Gram-negative bacteria to grow freely.

Differentiation: Sorbitol replaces lactose as the sole fermentable carbohydrate. Organisms that ferment sorbitol produce acid, which causes the neutral red pH indicator to turn the colonies pink to red. Non-sorbitol fermenters (notably E. coli O157:H7) produce colourless, translucent colonies, allowing rapid preliminary identification.

Organism	Sorbitol Fermentation	Colony Appearance
Escherichia coli O157:H7	Negative	Colourless / translucent
Most other E. coli strains	Positive	Pink to red with bile precipitate
Salmonella spp.	Negative	Colourless
Shigella spp.	Negative (variable)	Colourless to pale
Klebsiella spp.	Positive	Pink to red, mucoid
Gram-positive organisms	Inhibited	No growth

4. Preparation Instructions

Suspension	Suspend 48.5 g of dehydrated powder in 1 litre of purified water (Type 1 or Type 2, as per ISO 3696).
Mixing	Mix thoroughly until uniformly dispersed. Allow to soak for 5 minutes.
Sterilisation	Heat with frequent agitation and boil for 1 minute until completely dissolved. DO NOT AUTOCLAVE — excessive heat degrades the medium components.
Dispensing	Cool to 45–50 °C in a water bath. Pour into sterile Petri dishes (approximately 20 mL per plate) or into culture vessels as required.
Solidification	Allow plates to solidify on a level surface. Leave lids slightly ajar for 1–2 minutes to remove excess surface moisture.
Drying (optional)	Dry plates in an incubator at 37 °C for 15–30 minutes or in a laminar flow cabinet before use.
Inoculation	Inoculate plates using standard streaking techniques within 4 hours of preparation or as per validated method.
Incubation	Incubate aerobically at 35–37 °C for 18–24 hours. Examine at 24 hours; re-incubate for a further 24 hours if necessary.
Volume per pack	100 g → approx. 2 litres prepared medium (~100 plates) 500 g → approx. 10 litres prepared medium (~500 plates)

5. Quality Control

Test Organism	ATCC / NCTC	Expected Result	Incubation
Escherichia coli O157:H7	ATCC 35150	Good growth; colourless colonies	35–37°C, 18–24 h
Escherichia coli	ATCC 25922	Good growth; pink-red colonies	35–37°C, 18–24 h
Salmonella Typhimurium	ATCC 14028	Good growth; colourless colonies	35–37°C, 18–24 h
Staphylococcus aureus	ATCC 25923	Inhibited / no growth	35–37°C, 18–24 h
Enterococcus faecalis	ATCC 29212	Inhibited / no growth	35–37°C, 18–24 h

6. Applications

Application	Details

Clinical Microbiology	Primary isolation of E. coli O157:H7 from stool, urine, and wound swab specimens
Food Microbiology	Detection of E. coli O157:H7 in meat, dairy, produce, and ready-to-eat food products
Environmental Monitoring	Testing of water, soil, and environmental surface samples for faecal coliforms
Public Health & Epidemiology	Outbreak investigation and surveillance for Shiga toxin-producing E. coli (STEC)
Research	Studies on sorbitol fermentation, E. coli pathogenicity, and coliform differentiation

7. Storage & Handling

Storage — Dehydrated	Store tightly sealed at 15–30 °C in a cool, dry, well-ventilated area. Protect from moisture, direct sunlight, and heat.
Storage — Prepared Medium	Store prepared plates inverted at 2–8 °C in sealed bags. Use within 2 weeks of preparation.
Shelf Life — Dehydrated	Refer to expiry date on container label. Typically 3–5 years from manufacture date.
Shelf Life — Prepared	Maximum 2 weeks at 2–8 °C when stored inverted in sealed plastic bags.
PPE	Laboratory coat, nitrile gloves, safety glasses. Standard microbiological containment Level 2 practices apply.
Signs of Deterioration	Discard if: medium shows caking, colour change, or fails to meet QC performance criteria.
Disposal	Autoclave (121 °C, 15 min) all used media and cultures before disposal as biological waste, in accordance with local regulations.

8. Performance Standards & References

- ISO 16654:2001 — Microbiology of food and animal feeding stuffs — Horizontal method for the detection of Escherichia coli O157.
- ISO 11133:2014 — Microbiology of food, animal feed and water — Preparation, production, storage and performance testing of culture media.
- AOAC Official Method 996.09 — Escherichia coli O157:H7 in foods.
- United States Pharmacopeia (USP) <61> — Microbiological Examination of Nonsterile Products.

• March, S.B. & Ratnam, S. (1986). Sorbitol-MacConkey medium for detection of Escherichia coli O157:H7 associated with hemorrhagic colitis. Journal of Clinical Microbiology, 23(5), 869–872.

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