EP
USP
JP

XLD (Xylose Lysine Desoxycholate) Agar (acc. to harm. Method of EP/USP/JP)

Medium proposed by TAYLOR (1965), TAYLOR and HARRIS (1965, 1967) and TAYLOR and SCHELHART (1967) for the isolation and differentiation of pathogenic *Enterobacteriaceae*, especially of *Shigella* and *Salmonella* species.

General Information

This medium complies with the recommendations of the harmonised method in the European Pharmacopeia 5.6 and the United States Pharmacopeia 29 (2006).

Mode of Action

Degradation of xylose, lactose and sucrose to acid causes phenol red to change its colour to yellow. Production of hydrogen sulfide is indicated by thiosulfate and iron(III) salt, which react to form a precipitate of black iron sulfide in the colonies.

Bacteria which decarboxylate lysine to cadaverine can be recognized by the appearance of a purple colouration around the colonies due to an increase in pH.

These reactions can proceed simultaneously or successively, this may cause the pH indicator to exhibit various shades of colour or it may change its colour from yellow to red on prolonged incubation. The culture medium is weakly inhibitory.

Typical Composition (g/litre)

Yeast extract 3.0; sodium chloride 5.0; D(+)xylose 3.5 ; lactose 7.5; sucrose 7.5; L(+)lysine 5.0; sodium deoxycholate 2.5; sodium thiosulfate 6.8; ammonium iron(III) citrate 0.8; phenol red 0.08; agar-agar 13.5 .

Preparation

1. Weigh out 55.2 g of XLD Agar.
2. Add 50 ml of demin. water to a flask
3. Transfer 55,2 g of XLD Agar gently to flask with swirling.
4. Mix thoroughly, add remaining 950 ml demin. water, until completely suspended. Check for lumps. If present repeat mixing.
5. Heat to boiling to dissolve completely (variously shaking).
6. Immediately cool the medium to about 47-50 °C in a water-bath set at this temperature. Agitate flask to cool rapidly.
7. Pour plates.
8. Dry plates and check for sterility prior to use.

Note: preparation of large volumes, overheating and prolonged storage in water bath (47-50 °C) should be avoided.

■ Do not autoclave.

pH: 7.4 ± 0.2 at 25 °C.

The plates are clear and red.

Experimental Procedure and Evaluation

Inoculate by spreading the material thinly on the surface of the plates.

Incubation: For *Salmonella* up to 18 hours at 35°C, for *E.coli* up to 48 hours at 35 °C aerobically.

Further tests should be performed in order to identify the colonies.

Appearance of Colonies	Microorganisms
Colonies have the same colour as the culture medium, sometimes with a black centre	Salmonella
Orange, slightly opaque	Salmonella typhosa (xylose-positive strains)
Colonies have the same colour as the culture medium, translucent	Shigella, Providencia, Pseudomonas
Yellow, surrounded by yellow zones, opaque with precipitation zones	Escherichia coli, Enterobacter, Aeromonas
Yellow, surrounded by yellow zones, opaque, mucoid with pre-cipitation zones	Klebsiella
Yellow, surrounded by yellow zones, opaque, sometimes with a black centre	Citrobacter (lactose-positive strains)
Yellow, surrounded by yellow zones, opaque,	Serratia, Hafnia
Yellow, surrounded by yellow zones, translucent, black centre	Proteus vulgaris, most Proteus mirabilis

Literature

European Pharmacopeia 5.6, Chapter 2.6.13 B (Harmonised Method), 2006.

United States Pharmacopeia 29 - NF 24, Chapter 62, Microbial examination of nonsterile products: Tests for specified microorganisms, 2006

Ordering Information

Product	Ordering No.	Pack size
XLD (Xylose Lysine Deoxycholate) Agar (acc. harm. Method EP/USP/JP)	1.05290.0500	500 g

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Quality control (spiral plating method)

Test strains	Inoculum (CFU)	Recovery (%)	Colony colour	Black centre	Colour change of medium
Escherichia coli ATCC 8739	> 1000	no limit	yellow	-	yellow + precipitate
Salmonella typhimurium ATCC 14028	10 - 100	≥ 30	red	+	-
Salmonella abony NCTC 6017	10 - 100	≥ 30	red	+	-