

Motility Indole Ornithine(MIO) Medium

Catalog : HB4207-1-250

Motility Indole Ornithine(MIO) Medium is used for the identification of Enterobacteriaceae on the basis of motility, ornithine decarboxylase activity and indole production.

Approximate Formula:

Ingredients	gm./liter
Yeast Extract	3.0
Peptone	10.0
Tryptone	10.0
L-Ornithine Hcl	5.0
Dextrose	1.0
Agar	2.0
Bromocresol Purple	0.02
Final pH 6.5±0.2 at 25 °C	

*Adjusted and/or supplemented as required to meet performance criteria.

Directions:

Suspend 31.0g of the medium in one liter of distilled water or deionized water. Mix well and heat with frequent agitation to completely dissolve the powder. Dispense into test tubes (5.0ml/tube). Sterilize in an autoclave at 121 °C (15 lbs.) for 15 minutes.

Principle and Interpretation:

Yeast extract is the source of vitamin B complex. Peptone and Tryptone provide amino acids and other nitrogenous substances. Dextrose is the fermentable carbohydrate. Test cultures are stab-inoculated into the medium butts. Organisms ferment dextrose to form acid, which causes the pH indicator bromocresol purple to change from purple to yellow. Organisms possessing ornithine decarboxylase enzyme, decarboxylate ornithine to putrescine which increases the pH making it alkaline, indicated by a colour change from yellow to purple throughout the medium. Decarboxylase negative reaction is indicated by yellow colour or yellow with a purple band near the top of the medium. Indole is produced from tryptophan present in tryptone. The indole produced combines with the aldehyde present in the Kovacs reagent to form a red complex. Agar is the solidifying reagent.

Appearance:

Dehydrated medium is a free-flowing yellowish powder. The prepared medium is a kind of purple transparent gel.

Precautions:

This medium is for laboratory use only. Dried medium which is past shelf life, caking or color variation cannot be used.

Storage conditions and Shelf life:

Motility Indole Ornithine(MIO) Medium must be stored tightly capped in the original container at 5-30°C. The dehydrated medium has a shelf life of 5 years from date of manufacturing. Prepared medium may be stored, out of direct light at 2-8°C.

Quality control:

Prepare the culture medium as per label directions. Stab-inoculated into the medium butts. Incubate at 36±1°C for 24-48 hours. After incubation, add Kovacs' reagent to determine the indole reaction.

Microorganism	Strains Number	Growth	Motility	Indole production	Ornithine Decarboxylation
<i>Enterobacter aerogenes</i>	ATCC 13048	Luxuriant	+	-	+
<i>Escherichia coli</i>	ATCC 25922	Luxuriant	+	+	+
<i>Klebsiella pneumoniae</i>	ATCC 13883	Luxuriant	-	-	-
<i>Proteus mirabilis</i>	ATCC 12453	Luxuriant	+	-	+
<i>Salmonella typhimurium</i>	ATCC 14028	Luxuriant	+	-	+

References:

1. MacFaddin J. F., 2000, Biochemical tests for Identification of Medical Bacteria, 3rd Ed., Lippincott, Williams and Wilkins, Baltimore.
2. Ewing W. H., 1986, Edwards and Ewings Identification of Enterobacteriaceae, 4th Ed., Elsevier Science Publishing Co., Inc., New York.
3. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock, D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.