M1428 MIO Medium (Motility Indole Ornithine Medium)

MIO Medium is used for the identification of *Enterobacteriaceae* on the basis of motility, indole production and ornithine decarboxylase activity.

Composition:

Ingredients	Grams/Litre
Casein Enzymic Hydrolysate	10.0
Peptic Digest of Animal Tissue	10.0
Yeast Exract	3.0
L-Ornithine Hydrochloride	5.0
Dextrose	1.0
Bromo Cresol Purple	0.02
Agar	2.0
Final pH 6.5 +/- 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: Yellow colored, homogeneous, free flowing powder.
Gelling: Semisolid
Color and Clarity: Purple colored, clear to slightly opalescent gel forms in tubes.

Directions:
Suspend 31 g of MIO Medium in 1000 ml of distilled water. Boil to dissolve the medium completely. Dispense 5 ml into each test tube. Sterilize by autoclaving at 15 lbs. pressure (121°C) for 15 minutes. Cool the tubes in an upright position.

Principle and Interpretation:
Casein enzymic hydrolysate and the peptic digest of animal tissue provide amino acids. Yeast extract is the source of Vitamin B complex. Dextrose is the fermentable carbohydrate. Motility and ornithine decarboxylation reactions are read before testing indole production. Motile organisms show either diffused growth or turbidity extending away from the inoculation line; while nonmotile organisms grow along the inoculation line. Organisms ferment dextrose to form acid which cause the bromo cresol purple which is the pH indicator to change from purple to yellow. Organisms possessing ornithine decarboxylase, decarboxylate ornithine to putrescine which increases the pH making it alkaline. Indole is produced from tryptophan present in casein enzymic hydrolysate.

Cultural characteristics after 40-48 hours at 35-37°C.

Organisms (ATCC)	Growth	Motility	Indole	Ornithine decarboxylase
Enterobacter aerogenes (13048)	+++	+	-	+
Escherichia coli (25922)	+++	+	+	+
Klebsiella pneumoniae (13883)	+++	-	-	-
*Proteus mirabilis** (25933)	+++	+	-	+

* motility of *Proteus mirabilis* is temperature dependent. It is more pronounced at 20□C and almost absent at 35°C.

References:

1. MacFaddin, J.F., (1985). Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria. Vol.1. Williams and Wilkins. Baltimore, Maryland.
2. American Type Culture Collection, Manassas, Va., U.S.A.

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.