

## NITRATE AGAR

Medium for aerobic and facultative anaerobic gram-negative bacteria differentiation by means of the nitrate reduction test.

### TYPICAL FORMULA (g/L)

Peptone .....	5.0
Meat Extract.....	3.0
Potassium Nitrate.....	1.0
Agar.....	18.0
Final pH 7.0 ± 0.2	

### DESCRIPTION

NITRATE AGAR is a medium for differentiation of bacteria by means of the nitrate reduction test.

### PRINCIPLE

The nitrate reduction to nitrite is a metabolic capability of microorganisms that subtract oxygen from nitrate to form nitrite. The nitrites are colourless and react with the reagents sulphanilic acid and alpha-naphthylamine with the formation of a red compound. In the positive reaction, microorganisms reduce nitrates to nitrites and after the addition of reagents in the culture medium, a red-orange colour develops. In the negative reaction, microorganisms are unable to reduce nitrates to nitrites and so no colour develops in the culture medium after the addition of the two reagents. In case of negative reaction - no red-orange colour development - it is necessary to add a small quantity of zinc powder: metallic zinc reduces nitrates to nitrites. The red-orange colour development, after its addition, indicates that nitrates were present initially and they were reduced to nitrites by metallic zinc and not by bacteria (nitrates reduction to nitrites: negative); the absence of a red-orange colouring, after the addition of zinc indicates that nitrates have been reduced at first to nitrites and subsequently to other compounds (nitrates reduction to nitrites: positive).

### TECHNIQUE

Inoculate the medium with a colony that is well isolated on the isolation medium, by stabbing the butt and streaking the slope using a sterile loop. Incubate at 35±2°C for 24 hours. Add one drop of alpha-naphthylamine reagent and one drop of sulphanilic acid reagent and await some seconds. Observe the development of a red-orange colouring. In case of negative reaction add a small quantity of zinc powder and observe the eventual development of the red-orange colouring.

### STORAGE

10-25°C away from light, until the expiry date on the label or until signs of deterioration or contamination are evident.

### WARNING and PRECAUTIONS

The product is not classified as hazardous by current legislation and does not contain harmful substances in concentrations of ≥1%. The product is designed for *In vitro* diagnostic use and must be used only by properly trained operators.

### DISPOSAL of WASTE

Disposal of waste must be carried out according to national and local regulations in force.

### REFERENCES

1. Ewing 1986. *Edwards & Ewing's. Identification of Enterobacteriaceae, 4<sup>th</sup> ed. Elsevier Science Publishing Co. Inc. New York.*
2. MacFaddin 1980. *Biochemical Tests for the identification of medical bacteria, 2<sup>nd</sup> ed. Williams & Wilkins, Baltimore.*
3. Finegold and Baron. 1986 *Bailey and Scott's. Diagnostic microbiology, 7<sup>th</sup> ed. The C.V. Mosby Company, St. Louis.*
4. Kelly, Brenner and Farmer. 1985. *In Lennette, Balows, Hausler and Shadomy (ed.), Manual of clinical microbiology, 4<sup>th</sup> ed. ASM, Washington, D.C.*





## PRODUCT SPECIFICATIONS

### NAME

NITRATE AGAR

### PRESENTATION

Ready-to-use glass tubes containing 12.5+/-1 ml.

### PACKAGING

Code	Content	Packaging
30013	10 tubes x 12.5 ml	10 tubes in cardboard box

### pH OF THE MEDIUM

7.0 ± 0.2

### USE

NITRATE AGAR is a medium for differentiation of bacteria by means of the nitrate reduction test.

### TECHNIQUE

Refer to technical sheet of the product.

### APPEARANCE of the MEDIUM

Medium amber, clear medium.

### SHELF LIFE

1 year

### STORAGE

10-25°C

### QUALITY CONTROL

1. Control of general characteristics, label and print

2. Sterility control

7 days at 25 ± 1°C, in aerobiosis

7 days at 36 ± 1°C, in aerobiosis

3. Microbiological control

Inoculum for productivity: 10-100 UFC/ml

Inoculum for selectivity: 10<sup>4</sup>-10<sup>5</sup> UFC/ml

Inoculum for specificity: ≤ 10<sup>4</sup> UFC/ml

Incubation conditions: 24 h at 35+/-2°C

Microorganism		Growth	Nitrate reduction
<i>Acinetobacter calcoaceticus</i>	ATCC 19606	Good	-
<i>Enterobacter aerogenes</i>	ATCC 13048	Good	+
<i>Pseudomonas aeruginosa</i>	ATCC 27853	Good	+
<i>Escherichia coli</i>	ATCC 25922	Good	+

### TABLE of SYMBOLS

SYMBOL	MEANING
	In Vitro Diagnostic Medical Device
	Manufacturer
	Catalogue number
	Use by
	Temperature limitation
	Consult accompanying documents
	Do not reuse
	Fragile, handle with care
	Contains sufficient for <n> tests
	Batch code



**Liofilchem s.r.l** Bacteriology Products

Via Scozia-Zona industriale - 64026 Roseto degli Abruzzi Tel. +39.085.8930745 - Fax +39.085.8930330

Web site: <http://www.liofilchem.net> E-mail: [liofilchem@liofilchem.net](mailto:liofilchem@liofilchem.net)