

## Orange Serum Agar, Granulated

**GM933**

Orange Serum Agar, granulated is used for cultivation and enumeration of microorganisms associated with the spoilage of citrus products, cultivation of Lactobacilli, other aciduric organisms and pathogenic fungi.

### Composition\*\*

Ingredients	Gms / Litre
Casein enzymic hydrolysate	10.000
Yeast extract	3.000
Dextrose	4.000
Dipotassium phosphate	2.500
Orange serum (Solids from 200 ml)	9.000
Agar	17.000
Final pH ( at 25°C)	5.5±0.2

\*\*Formula adjusted, standardized to suit performance parameters

### Directions

Suspend 45.5 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. AVOID OVERHEATING. Cool to 45-50°C. Mix well and pour into sterile Petri plates.

### Principle And Interpretation

Fruit juices are generally acidic, with pH values ranging from approximately 2.4 for lemon juice, to 4.2 for tomato juice. The low pH of these foods is selective for yeast, moulds and a few groups of aciduric bacteria. The microorganisms of greatest significance in citrus juices are the lactic acid bacteria, primarily species of *Lactobacillus* and *Leuconostoc*, yeast and moulds. Microbial spoilage of these citrus fruit juices are most commonly due to aciduric microbes such as lactic acid bacteria and yeast. The lactic acid bacteria include *Lactobacillus fermentum*, *L.plantarum*, and *Leuconostoc mesenteroides*.

Orange Serum Agar is recommended by APHA (1) for cultivation of Lactobacilli and other aciduric organisms. Orange Serum Agar was originally developed by Murdock et al (2) and Hays (3) for examining citrus concentrates. Hays and Reister further used this medium for studying the spoilage of orange juice (4). Dehydrated agar medium containing orange serum was reported by Stevens (6). Orange Serum Broth is used to initiate growth of saprophytic, pathogenic fungi in small samples (5).

Casein enzymic hydrolysate provides essential nitrogenous nutrients while dextrose serves as the fermentable carbohydrate and energy source. Yeast extract supplies B- complex vitamins, which stimulate growth. Orange serum provides an optimal environment for the recovery of acid tolerant microorganisms from citrus fruit products.

### Quality Control

#### Appearance

Cream to yellow colored granular medium

#### Gelling

Firm, comparable with 1.7% agar gel.

#### Colour and Clarity of prepared medium

Medium to dark amber coloured clear to slightly opalescent gel forms in Petri plates

#### Reaction

Reaction of 4.55% w/v aqueous solution at 25°C. pH : 5.5±0.2

#### pH

5.30-5.70

#### Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for 40-48 hours.(Fungal species are incubated at 25-30°C)

#### Cultural Response

Organism	Inoculum (CFU)	Growth	Recovery
<b>Cultural Response</b>			
* <i>Aspergillus brasiliensis</i> ATCC 16404	50-100	good-luxuriant	
<i>Candida albicans</i> ATCC 10231	50-100	good-luxuriant	>=50%
<i>Lactobacillus acidophilus</i> ATCC 4356	50-100	good-luxuriant	>=50%
<i>Lactobacillus fermentum</i> ATCC 9338	50-100	good-luxuriant	>=50%
<i>Leuconostoc mesenteroides</i> ATCC 12291	50-100	good-luxuriant	>=50%
<i>Saccharomyces cerevisiae</i> ATCC 9763	50-100	good-luxuriant	>=50%

Key : \* - Formerly known as *Aspergillus niger*

### Storage and Shelf Life

Store below 30°C in tightly closed container and the prepared medium at 2 - 8°C. Use before expiry date on the label.

### Reference

- Downes F. P. and Ito K., (Ed.), 2001, Compendium of Methods for the Microbiological Examination of Foods, 4th Ed., American Public Health Association, Washington, D.C.
- Murdock P. I., Folinazzo J. F., and Troy V. S., 1951, Food Technol., 6:181.
- Hays G. L., 1951, Proc. Florida State Hort. Soc., 54:135.
- Hays G. L. and Reister D. W., 1952, Food Technol., 6:186.
- MacFaddin J. F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore
- Stevens J. W., 1954, Food Technol., 8:88.

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