



## Orchid Agar

M848

Orchid Agar is used for germination of orchid seeds.

### Composition\*\*

| Ingredients                        | Gms / Litre |
|------------------------------------|-------------|
| Calcium nitrate                    | 1.000       |
| Monopotassium dihydrogen phosphate | 0.250       |
| Magnesium sulphate                 | 0.250       |
| Ammonium sulphate                  | 0.500       |
| Ferrous sulphate                   | 0.025       |
| Manganese sulphate                 | 0.0075      |
| Saccharose                         | 20.000      |
| Agar                               | 8.000       |
| Final pH ( at 25°C)                | 5.0±0.2     |

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

### Directions

Suspend 30.03 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. Mix well and pour into sterile Petri plates.

### Principle And Interpretation

Orchids exhibit flowers of exquisite beauty and variety of patterns and belong to one of the largest family, the *Orchidaceae*. Orchids are the first floricultural crop successfully mass propagated through tissue culture technique. Orchids may be propagated either sexually or asexually. Vegetative propagation is common practice for many of the commercial orchids. Germination of seeds can be symbiotic or asymbiotic. Symbiotic seed germination is done under natural conditions, the orchid seeds germinate after being infected by fungus and mycorrhiza. Orchid seeds have only minute reserves of food and the symbiotic organisms provide the required nutrients. Lewis Knudson in 1916 formulated a medium in which orchid seed were germinated successfully without fungal infection (4). Asymbiotic germination is done by aseptic inoculation of seeds on medium.

Orchid Agar was developed by Knudson (1, 2) for the germination of orchid seeds. In his research he found the importance of the presence of minor elements like copper, manganese and zinc for the growth of orchid seeds. The medium also consists of iron, which is three times more the concentration of manganese. Somers and Shive (3) reported that double or triple the amount of iron, than manganese, in the medium is optimum for orchid seed germination. Ammonium and magnesium sulphate in the medium helps in germination of the orchid seeds. Saccharose (sucrose) is the carbohydrate source in the medium while monopotassium phosphate helps in maintaining the acidic pH of the medium by its buffering action.

### Quality Control

#### Appearance

White to cream homogeneous free flowing powder

#### Gelling

Firm, comparable with 0.8% Agar gel

#### Colour and Clarity of Prepared medium

Light yellow coloured opalescent gel forms in Petri plates that may contain a slight precipitate.

#### Reaction

Reaction of 3.0% w/v aqueous solution at 25°C. pH : 5.0±0.2

#### pH

4.80-5.20

#### Cultural Response

Satisfactory germination of orchid seeds was observed within a month.

### 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

1. Knudson L., 1922, Bot. Gaz., 73:1.
2. Knudson L., 1943, Amer. Orchid. Soc. Bull., 12:77.
3. Somers I. I. and Shive J. W., 1942, Plant Physiol., 17:582.
4. Knudson L., 1916, Cornel Univ. Agric. Exper. Sta. Merm 9:1

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