

Preparation of sterile medium

Making an orchid medium does not at all have to be difficult. The ingredients are simple: sugar, liquid fertilizer, potato, fresh orange juice and agar. Together, these ingredients contain the necessary plant hormones, carbohydrates, amino acids, pH-buffer and inorganic nutrients.

Per litre:

Liquid fertilizer for indoor plants	2 ml
Potato (blended)	25 g
Fresh orange juice	25 ml
Sucrose (table sugar)	12 g
Agar	6-8 g



Clingfilm to be sterilized in the microwave oven and medium for the pressure cooker.

Mix the ingredients and add tap water to a volume of 1 l. Use bottled spring water if your tap water is chlorinated. Adjust the pH to 5.7-5.8 by adding a few drops of sodium hydroxide (0.1 M) at a time

followed by a good stir. The pH is estimated with pH test-strips, bought at the pharmacy. Strips for the range 4.5 to 7 are the most precise. If the pH becomes too high, it may be lowered again by adding a few ml of orange juice. Boil to dissolve the agar.

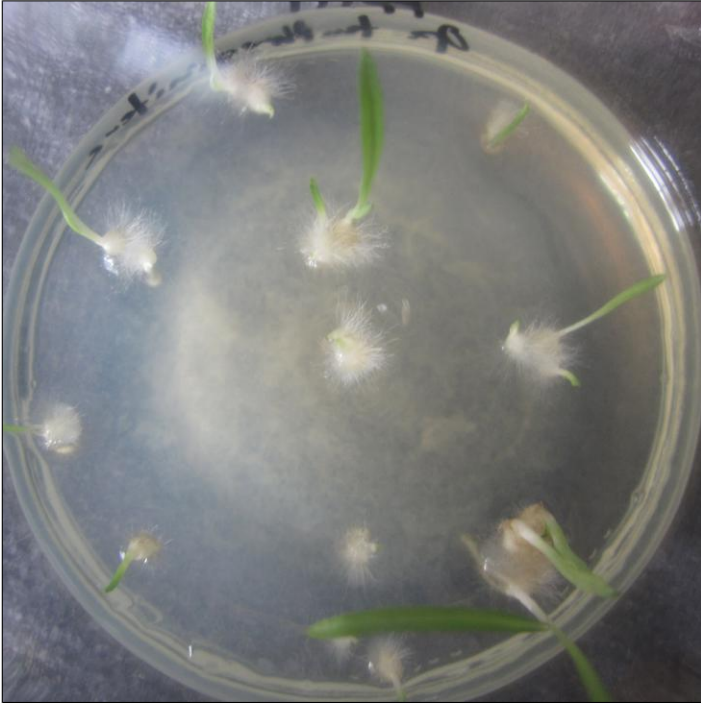


Pressure cooker for sterilization of the medium.

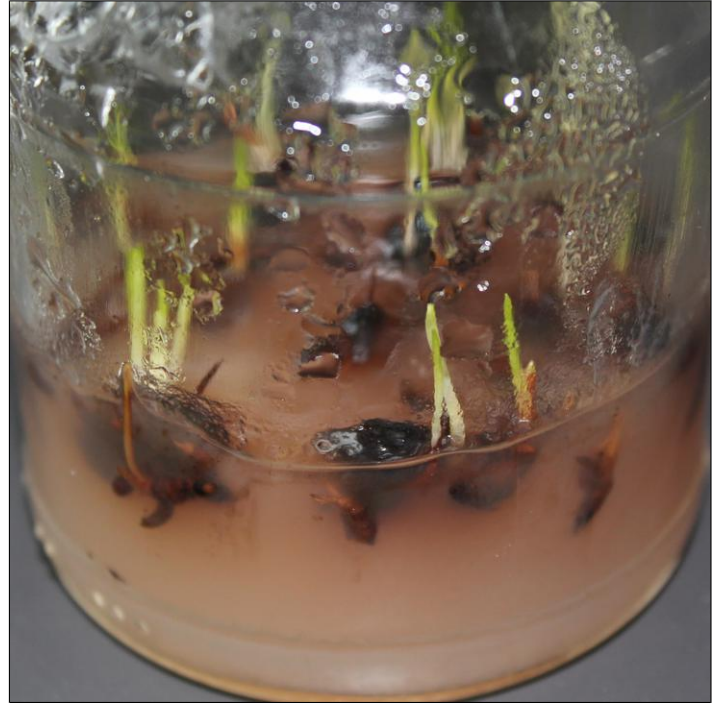
Professional growers sterilize the medium in special glassware like Erlenmeyer flasks, but ordinary tomato sauce or jam jars are also good culture flasks, especially if they have narrow tops that reduce the risk of contamination. Remove all traces of glue (from the labels) before using the flasks. This is because toxic compounds from the glue may be released during sterilization and enter the medium. Fill the flasks with the hot medium, about 2 cm, cap with two layers of aluminium foil and boil in a kitchen pressure cooker for 30 min. Store the flasks in closed plastic bags in the refrigerator.

The liquid fertilizer should have a total nitrogen content of 5% to 6% (containing both ammonium-N and nitrate-N) and should also contain micronutrients. I use a Danish brand called Substral with the following content: nitrogen 6% (nitrate-N 3.3%, ammonium-N 2.7%), phosphorous 1.3%, potassium 5%, boron 0.01%, copper 0.005%, iron 0.03%, manganese 0.01% zinc 0.002%, trace elements are chelated with EDTA and DTPA to keep them in solution.

Agar gives the medium a gel-like structure and can often be bought in Asian food shops. Wash the agar three times in water before use to remove chloride and other compounds that are toxic for the small orchids. Enzymes (proteases) in the fresh orange juice will hydrolyze some of the protein in the blended potato. This will provide peptides and free amino acids for the germinating seeds. The enzymes are not active in canned orange juice.



Ophrys tenthredinifera, first year.



These *Dactylorhiza* seedlings certainly did not like this batch of medium. Sometimes something goes wrong, here it was probably the pH.



Satyrium nepalense seedlings, second year. Germination and bulb formation on the same medium



My recipe also works well for tropical epiphytes like *Phalaenopsis*.