

LAB LESSON PLAN
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*California Agriscience Institute for Agriculture Teachers
California Department of Education*

LAB TITLE: PREPARATION OF MEDIA

Ag Model Curriculum Standard(s), Learning Outcomes(s)
& Biological Standard(s)

Addressed: Biological Standards 1,2,9,10,12,13,17

Objective(s): Upon completion of the lab activity, the learner
will be able to: Introduce students to the basic concepts of
and techniques of tissue culture and micropropagation. To enable
students to understand the relationship of plant tissue culture to
plant biotechnology. Students appreciate the importance of
technological advances in the field of agriculture.

Teacher Preparation: More than one week. Need to order
supplies.

How many class periods will lab take? One to three days setup.

Procedures (activities): _____

Method(s) of Evaluation: Laboratory writeup and teacher
observation.

LABORATORY #3 - PREPARATION OF MEDIA

PURPOSE

To learn the basic procedure of preparing media from prepackaged formulations. Nutrient medium contains all the major and minor mineral elements, as well as vitamins, plant growth regulators, sucrose, and a support such as agar. We will be using a commercial powdered preparation in which all mineral, vitamin, and growth regulator components have been weighted for us.

MATERIALS AND METHODS

1. Place a volume of distilled or deionized water, equal to about $\frac{2}{3}$ the total volume of media to be prepared, in a beaker.
2. Add contents of packet.
3. Stir until dissolved.
4. Weigh out 30 grams sucrose and add to solution.
5. Adjust pH to 5.7 - 5.8.
6. Bring to total volume of 1000 ml.
7. If you are preparing liquid media, dispense into culture vessels at this point.
8. For agar medium weight, out 5.0 gm Sigma agar. Transfer medium to large flask and add agar. Stir while over head until dissolved. Dispense into culture vessels. Add caps to vessels.
9. Autoclave for 15 min at 121 degrees C. Note: Use flasks or other vessels with a capacity 2 times that of the amount of medium being autoclaved to avoid boiling over.
10. Let medium cool before adding plant material.

DISCUSSION QUESTIONS

1. Why is sucrose added to the medium? Don't plants get their carbon from photosynthesis?

2. Why are the mineral salts termed 'macronutrients' and 'micronutrients'? {macronutrients include C,H,O,N,P,S,K,Ca,Na,Mg,Cl; micronutrients include I,Bo,Mb,Co,Mn,Cu,Zn,Fe}
3. Are there any other compounds which might be added for plant tissue culture?

MATERIALS NEEDED FOR LAB	NUMBER NEEDED/STUDENT OR GROUP
500 or 1000 ml beaker	2
1000 ml Erlenmeyer flask	1
Graduated cylinders 1000 ml	
Magnet stirrer	1
Stirring bar	1
Package of medium	1

General materials needed for whole class:

Balance
 Weighing papers
 Sucrose
 Spatulas
 pH meter
 0.1 and 1.0 N HCL and KOH with droppers
 Agar
 Aluminum foil
 Test tubes and covers
 Spray bottle with isopropyl alcohol for hood
 Marking pens
 Marking tape
 Scissors