

V. CONCLUSION

CONCLUSION

The intention of the proposed work "A study on the mineral nutrition and biochemistry of some freshwater phytoplankters" was to ascertain the influence of certain nutrient elements, P, Ca, Mg, Fe, Mn and Zn on the growth and metabolism of three microalgae namely, *Chlorococcum humicola*, (Naeg.) Rabenhorst, *Chlorella ellipsoidea*, Gerneck and *Scenedesmus bijuga*, (Turp.) Lagerheim and to determine the optimum requirements of these nutrients for each algal species. From the results of the present study following conclusions were made:

- All the elements selected for the study viz. phosphorus, calcium, magnesium, iron, manganese and zinc are essential for the normal growth and metabolism of *Chlorococcum humicola*, (Naeg.) Rabenhorst, *Chlorella ellipsoidea*, Gerneck and *Scenedesmus bijuga*, (Turp.) Lagerheim.

- Requirements of these nutrients by different algal species as well as their tolerance to these elements are species specific.
- Deficiency of any one of these elements will adversely affect the normal growth and metabolism of these organisms.
- The macronutrient phosphorus appears to be the major growth limiting nutrient as almost complete inhibition of growth of the three test algae resulted from its deficiency.
- Among the trace elements, Fe, Mn and Zn, the microalgae showed the least requirement for iron (Fe).
- Beyond the optimum levels, all the studied essential elements are found to be deleterious to the growth of test algae under controlled cultural conditions.
- The optimum concentrations of these elements needed for the adequate growth of the three microalgae are found to be as follows:

Chlorococcum humicolá, (Naeg.) Rabenhorst :- P-0.24 ppm, Ca-1.6 ppm, Mg-2.9 ppm, Fe-0.0075 ppm to 0.015 ppm, Mn-0.07 ppm, Zn-0.04 ppm to 0.06 ppm

Chlorella ellipsoidea, Gerneck:- P-0.24 ppm, Ca-0.8 ppm, Mg-1.46 ppm, Fe-0.015 ppm, Mn-0.035 ppm to 0.07 ppm, Zn-0.04 ppm to 0.08 ppm.

***Scenedesmus bijuga*, (Turp.) Lagerheim:-** P-0.24 ppm,
Ca-0.8 ppm, Mg-2.9 ppm, Fe-0.015 ppm, Mn-0.035 ppm to 0.07 ppm,
Zn-0.06 ppm to 0.08 ppm

Based on the current observations, appropriate medium for better growth and effective culturing of each algal species is proposed by making certain modifications in the composition of Ward and Parish medium. The modified medium for each algal species is given in pages 25 - 27.

