

ON HETEROTROPHIC GROWTH OF THE GREEN ALGA *Chlorella* sp.

by

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Abstract

On 16 organic substrates the heterotrophic growth of the green marine alga *Chlorella* sp. was tested quantitatively in the light as well as in the dark. The experiments were performed on 1,5 per cent agar media. The growth of colonies was stimulated by a great number of organic substrates, especially in the light.

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The autotrophic nutrition is a characteristic of algae in general. However, there are species having more or less ability for photoheterotrophic (mixotrophic) growth. Such species thrive as photosynthetic autotrophic organisms, but their growth is amplified by the addition of certain organic substances. Such substances are used as an additional source of energy.

To this day most of experiments about heterotrophy in algae were performed upon the freshwater species, but recently it is a matter of investigation in marine algae too (Dunstan et al. 1975, Ukeles and Rose 1976).

The axenic cultures of *Chlorella* sp. were maintained in the inorganic basal ASP-2 medium. All organic components (16) were added to the basal medium in the concentration of 0,05 M (Fig. 1). The media were solidified by means of 1,5 per cent agar, and the acidity was adjusted to pH=8. After inoculation the plates were placed in the light (1100 lux) and in the dark, at a temperature of $26 \pm 0,5^{\circ}\text{C}$. After 12 days of incubation the diameters of colonies were measured. The experiments were performed twice in duplicate.

Figure 1 shows that the majority of substrates stimulated growth, especially in the light (photoheterotrophy). The sugars showed a high stimulating influence on growth (especially glukose), but it was also inhibited by some substrates. In respect to the heterotrophic ability of *Chlorella* sp. we may consider planktonic algae as another factor taking part in the process of matter transformation in the sea. Moreover, in polluted environments the increased productivity of some phytoplankton species is possible, and because of their adaptation to such conditions we could look for the indicators of the pollution among them.

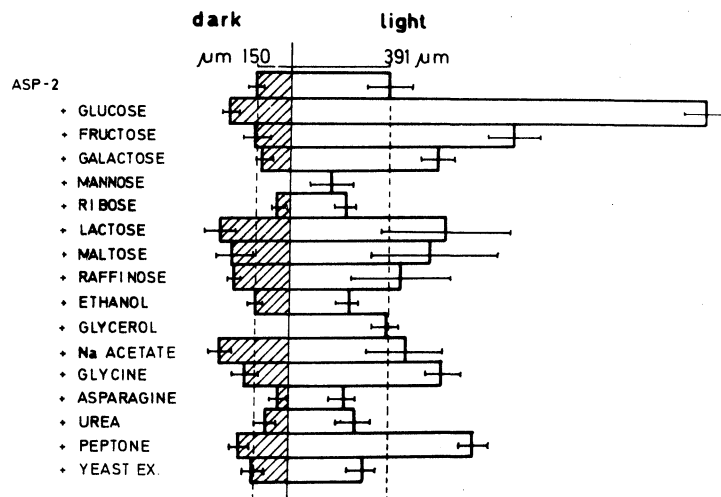


Fig. 1 Effect of organic substances added to the inorganic ASP-2 medium on growth of *Chlorella* sp.
The height of the columns represents diameter of colonies

References:

- Dunstan, W.M., L.P. Atkinson and J. Natoli (1975): Stimulation and inhibition of phytoplankton growth by the low molecular weight hydrocarbons. *Mar. Biol.* 31, 305-310.
- Ukeles, R. and W.E. Rose (1976): Observation on organic carbon utilization by photosynthetic marine microalgae. *Mar. Biol.* 37, 11-28.