

Effects of nutrient limitation and salt osmotic shock on the ABA level in halotolerant and acidophilic-halotolerant green algae

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Summary

Abscisic acid (ABA) is a hormone which has a number of roles during the life cycle of a plant. The variation of cellular ABA, protein and pigment content during the growth of a halotolerant green alga, *Dunaliella* sp. and an acidophilic-halotolerant green alga, *Chlamydomonas* sp. was investigated under nutrient limitation or osmotic stress.

Experimental results can be summarized as follows: in both *Dunaliella* sp. and *Chlamydomonas* sp., (1) ABA content was changed with the growth stage of culture: A rapid increase in ABA content was observed in the logarithmic phase. After this, the content rapidly decreased to low values. (2) The ABA content also increased with decreasing nitrate, phosphate or sulfate concentration of the medium. Nitrate deficiency caused the accumulation of large amounts of carotenoid in *Dunaliella* sp. but not in *Chlamydomonas* sp. (3) In *Dunaliella* sp., both hyperosmotic and hypoosmotic shocks caused, within 3 h, an increase in the internal ABA cytoplasmic concentrations, and after 6 h the content decreased to the original value.

The accumulation of ABA under stress suggests a similar hormonal function of ABA in higher plants. The present study suggests that the accumulation of ABA in halotolerant algae may inhibit growth, but more detailed investigations are needed.