Proceedings of the Joint Meeting AGI-SIBV-SIGA
Assisi, Italy – 19/22 September, 2011
ISBN **978-88-904570-2-9**

Oral Communication Abstract – 8.02

CANTHAXANTHIN PRODUCTION BY *SCENEDESMUS* SP., A CHLOROPHYTA FROM ANTARCTICA

LA ROCCA N., PASIN A., ANDREOLI C., RASCIO N., MORO I.

Department of Biology, University of Padova, Via U. Bassi 58/b, Padova (Italy)

Scenedesmus sp., light and temperature changes, pigments, ultrastructure

Scenedesmus sp. is a coccoid Chlorophyta, isolated from a lake near the Gondwana Station (Antarctica). Cultures of this photosynthetic microorganism were grown at three different conditions: 10 µmol photons m^{-2} s^{-1} at 4°C (low light and temperature); 100 µmol photons m^{-2} s^{-1} al 4°C (high light and low temperature) and 10 µmol photons m^{-2} s^{-1} at 16°C (low light and high temperature). In Antarctic lakes most of the year the autotrophic organisms live at low temperature and irradiance because of the ice-covering, which reduces incident light. Unexpectedly, our results highlighted that the microalga showed the best growth rate at the higher temperature. Moreover this condition did not negatively affect the cell morphology and pigment content. A lower growth rate was instead observed at high light. Furthermore, this irradiance induced the production of high amount of a secondary carotenoid (canthaxanthin) at the end of logarithmic growth and during the stationary phase. The synthesis of this compound is a mechanism activated by *Scenedesmus* sp. to avoid the risk of photoxidative damage to its photosynthetic apparatus. Considering that this metabolite is a commercial high-value compound and that *Scenedesmus* sp. has a relatively fast growth in high light condition, we hypothesize a possible use of this microalga as biotechnological resource.