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## Influence of abiotic stress on accumulation of xanthophylls and lipids in *Haematococcus* and *Scenedesmus* microalgae

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Carotenoids possess a very important antioxidant activity and consequently they have important nutraceutical properties including enhancement of immune responses and protection against various diseases, among which are certain types of cancer. The global carotenoid market value was \$1.5 billion in 2014. This market is expected to reach nearly \$1.8 billion in 2019, with a compound annual growth rate (CAGR) of 3.9%. Moreover, synthetic carotenoids are sold for between \$250 and \$2,000/kg, whereas natural carotenoids are sold for between \$350 and \$7,500/kg. For all these reasons it is resulting very important to explore the possibility to use microalgae to produce relevant amounts of ketocarotenoids in a sustainable way. In this work we investigated in particular the Astaxanthin

accumulation and esterification degree in an Argentinian *Haematococcus pluvialis* strain, grown at moderate and high light stress under autotrophic and mixotrophic conditions. The content of total lipids and neutral lipids was also analysed under the same culture conditions and the correlation between the accumulation of Astaxanthin and that of lipids was established. Finally the Lutein production and its accumulation efficiency in *Scenedesmus obliquus* strain was analysed by comparing the effect of different environmental conditions, obtained causing abiotic stress (oxidative, osmotic, edaphic) in the culture medium, known to be able to induce a greater Lutein accumulation efficiency.

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