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## FeSBE2004 - Meio Ambiente

## 29.005

**EFFECT OF COPPER ON THE ACTIVITY OF ACID PHOSPHATASE OF THE MICROALGAE SELENASTRUM CAPRICORNUTUM.** [Jonsson, C.](#)

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**Objetivo:** Copper is widely used in agriculture as fungicide. This element may also be present as a contaminant in sewage sludge applied to agricultural lands. The presence of copper in the water environment may have detrimental effects on aquatic organisms, including algae, where it can affect enzymatic systems. Algae acid phosphatase plays important roles in the metabolism such as decomposing organic phosphate into free phosphate; autophagic digestive process recycling cellular materials and zygote formation during reproduction. This work describes the activator in vitro effect of copper on the acid phosphatase activity of the green algae *Selenastrum capricornutum*.

**Métodos e Resultados:** The enzyme activity was determined using p-nitrophenylphosphate as substrate, measuring the p-nitrophenol formation at 405 nm. The enzyme activity was 50% increased in the presence of 1.8  $\mu\text{M}$   $\text{Cu}^{++}$ . The dissociation constant  $\text{Cu}^{++}$ -enzyme was determined to be 1.6  $\mu\text{M}$ .  $K_m$ ,  $V_{max}$ , activation energy ( $E_a$ ) and enzyme stability were determined in the absence or presence of  $\text{Cu}^{++}$ . In the presence of 0.2 mM  $\text{Cu}^{++}$ ,  $K_m$  and  $E_a$  decreased, whereas  $V_{max}$  did not significantly changed.

**Conclusões:** Our results suggest that the activator effect of copper might be due to the decrease in the  $K_m$  and  $E_a$  values and to an increase of the enzyme thermal stability.

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