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Growth, photosynthesis and some related metabolites as suitable selection criteria for the copper tolerance of *Ankistrodesmus falcatus*

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This investigation was conducted to study the effects of copper on growth and metabolism of *Ankistrodesmus falcatus* isolated from sewage water at El-Dare Treatment Plant. The alga was grown in BG-11 medium containing different Cu concentrations (0.0, 0.5, 5, 10, 50, 100, 150, 200 and 250 $\mu\text{m Cu}^{+2}$). The test organism was left to grow for 12 days under the various Cu levels. The effect of copper on the growth, photosynthetic pigments, protein metabolism (soluble, insoluble), antioxidant compounds (phenolic, Proline) were determined. The cell number and dry weight were increased highly significantly up to 10 $\mu\text{m Cu}^{+2}$, then the cell number and dry weight reduced gradually by increasing the doses of the copper. The concentration of photosynthetically active pigment peaked up to 10 $\mu\text{m Cu}^{+2}$, then they remained more or less unchanged up to 50 $\mu\text{m Cu}^{+2}$, after this it was reduced. The content of soluble carbohydrates decreased dramatically up to 10 $\mu\text{m Cu}^{+2}$, and then it was increased smoothly as the Cu concentration increased in culture media. Cu^{+2} Stress induced a significant changes in the soluble protein up to the level of 10 $\mu\text{m Cu}^{+2}$, then a high significant accumulation was obtained which peaked at the highest concentration of Cu^{+2} (250 μm). The insoluble and total proteins remained more or less unchanged at the all Cu^{+2} concentration used. Aminoacids content accumulated progressively and irregularly by Cu^{+2} treatment. While proline content decreased by about 65.6% at the level of 10 $\mu\text{m Cu}^{+2}$ concentration. It is on other hand increased by 261.7% at the level of 250 $\mu\text{m Cu}^{+2}$ in relation to control value. Phenolic compounds seemed to be not affected by copper treatment.

Biography

Magdy A Abo- Gharbia is an Assistant professor in Faculty of Science, Sohag University, Egypt. He obtained his PhD in Microbiology, Dundee University, Scotland (1989). He has more than 5 publications in various reputed journals.

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