

البحث الثانى

Biosorption and biodegradation of the antifouling compound Tributyltin TBT by Microalgae.

بحث مشترك وغير مستمد من رسائل علمية

المجلة المنشور بها البحث

American-Eurasian Journal of Scientific Research 4 (1): 1-6.

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ABSTRACT

The biosorption and biodegradation of tributyltin (TBT) at its sublethal concentration of the two unicellular algae *Nannochloropsis oculata* (a wall-celled stigmatophyte alga) and *Dunaliella parva* (a well-less chlorophyte alga) are investigated. The initial concentration of TBT in culture media of *N. oculata* was reduced by 46% within two days, while in *D. parva* it decreased stepwise reaching 50% within 6 days. At the end of the experiment (12 days) both algae sorped nearly 80% of the initial TBT content. The extracellular analysis of TBT cleared that biosorption by the algal cell wall of *N. oculata* was the major mechanism in reducing 40% of the initial TBT in the first two days (6% may be diffused through the cell wall of the alga). On the contrary, a very small amount of TBT was recorded on the outer membrane of *D. parva*, which disappeared after 4 days. The occurrence of DBT and MBT during the first few days in the culture media of *D. parva* and their absence in culture of *N. oculata* may support the fact that *D. parva* has a special internal mechanism for degrading TBT to the less toxic fractions DBT and MBT. In both algae the diffusion of TBT- which started early in *D. parva* – caused gradual increase in the intracellular concentration of TBT as time proceeded reaching maximum after 6 days in *D. parva* and 8 days in *N. oculata*. The gradual increase in the content of MBT on the expense of TBT and DBT may be the reason for the tolerance of *D. parva* to the toxicity of TBT.