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Bioremediation of polluted water using unicellular algae native from Argentina

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Physicochemical and microflora characterization of water samples from Cildañez stream at Ciudad Autónoma de Buenos Aires shows that these waters are mainly polluted by cloacal microorganisms, metals and compounds that raise the COD and BOD. In the present work, the remediation of these waters by bioprocesses in agitated tank bioreactors was simulated using cultures of a native strain of *Chlorella vulgaris* immobilized in alginate beads. The bioremediation processes were carried out in bioreactors with a marine impeller in autotrophic conditions for 7 days allowed the decrease of the microbial population particularly *Escherichia coli* and total coliforms reduction (over 95%) and several physical-chemical parameters and heavy metals. The percentage of pollutants removed was: ammoniacal nitrogen (96%), nitrates (86%), nitrites (98%) and total phosphorus (53%) content. Moreover, significant results were observed with lead content reduction (95%). In addition, the evaluation and monitoring of contaminated water can be done following the mitotic index and germinative power of *Allium cepa* seeds (Datsch Silveira *et al.*, 2017). This economic test evaluates cytostatic effects, DNA instability and inhibition of cell division, caused by xenobiotics. The test was done before and after each bioprocess using distilled water as negative control. Germination and mitotic indexes showed that treated waters after bioprocess recovers the values similar to the negative control. The results obtained demonstrate the potential of this algae to be used in integrated processes that seek removal of xenobiotics.

Biography

Carlos Nadra is Currently working as the Researcher at APRA-CIFA at Argentina. Her research interests include Bioremediation, Cytostatic effects.

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