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Effect of pharmaceutical effluent on soil phosphatase, dehydrogenase and urease activities: linking ecotoxicity to soil infertility

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ABSTRACT:

There are different ways of affecting the soil micro-flora, starting from the crude oil spill to industrial effluent. This scenario usually impacts negatively on plant growth indices, with the assumption that the soil fertility is impacted in a negative direction. Special attention is given to the effect of medicament effluent on the soil microflora or enzymes. The discharge of pharmaceutical waste is often accompanied with antimicrobial, antifungal and antiviral agents. In this study, effects of pharmaceutical effluents on the activities of some soil enzymes (*in situ*) - phosphatases, dehydrogenases and ureases were determined using spectrophotometric technique and other standard methods. Samples were collected from the point of discharge. The uncontaminated soil samples were spiked with pharmaceutical effluents. After thirty days, the soil samples were assayed for soil enzymes activities. The results showed significant de-regulation in activities of phosphatases, dehydrogenases and ureases on the effluents contaminated soil samples compared to the control. The soil obtained outside at the industrial site did not show a decrease in the urease activity. Comparing the results with the control samples, the present investigation suggests that industrial effluents if not treated before discharged may cause disruption and destruction of some soil enzymes.

Keywords:

Pharmaceutical effluent, Soil enzymes, Soil pollution, Soil ecosystem and Infertility.

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