EFFECT OF ANTIDEPRESSANT CITALOPRAM ON THE GROWTH RATE OF THE CHLOROPHYTE *PSEUDOKIRCHNERIELLA SUBCAPITATA*

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Abstract: This research paper reports the effect of the most commonly used and prescribed antidepressant Citalopram which comes under the class of Selective Serotonin Reuptake Inhibitors on non-target organisms especially algae that survive in the effluent receiving lakes situated close to bulk drug producing industries. The effect of most of these metabolites to the environment is unknown. For further understanding of their effects on these non-target organisms, this study was done. The chlorophyte algae *Pseudokirchneriella subcapitata* which is known to be highly sensitive to toxins was selected for analysis. The analysis was done using the Acute Single Species Growth Inhibition Assays. The concentration of the cells was opted as the criteria for measurement of growth rate and the organism was exposed to different quantities of Citalopram ranging from 0.001 mg/l, 0.01 mg/l, and 0.1 mg/l maintaining optimum temperatures of 21 ± 2°C.The effective concentration EC50 for 72 hrs was 4.9 mg/l. The efficacy of the results showed the growth rate at the end of the exposure for 72 hrs to be 190-fold (where the efficacy criterion is growth rate > 16 fold). The observed results, keeping the end point to be complete growth inhibition showed that the algae was highly sensitive to the antidepressant and the growth was inhibited at the lowest level of Citalopram ie., 0.001 mg/l. The metabolites of Citalopram Didesmethylcitalopram [DDCT] and Desmethylcitalopram [DCT] have also been observed to inhibit the growth of the species at exposure levels of 0.01mg/l. The results obtained thus suggest that minute quantities of the drug can induce effect on the growth and physiological functioning of the chlorophyte *Pseudokirchneriella subcapitata* The results obtained suggest that there is an immediate requirement to efficiently remove the compound as well as its metabolites from the effluents of the industries before they are released into the fresh waters to prevent their effects on non-target organisms.

Keywords: *Pseudokirchneriella Subcapitata,* Citalopram, Algal Toxicity, Lake Ecosystem, Growth Rate, SSRIs.

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