

ORIGINAL ARTICLE

EFFECT OF NICOTINE ON SOIL NITROGEN FIXING BACTERIA

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Abstract: *Nicotine is an alkaloid, which is present in different plants including *Nicotiana tabacum* (tobacco). The nitrogenous compound has the potential to act as mutagen by changing the DNA base sequences and by hydrocarbon group incorporation in the nucleotide resulting in incorrect base pairing. In the present study, the effect of nicotine on free living nitrogen-fixing bacteria of rice field was observed. *Azotobacter*, the free-living nitrogen fixing bacteria, was isolated from the soil of rice field, which was treated for prolonged duration of time with increasing concentration of nicotine. The culture of *Azotobacter sp.* was maintained in Ashby's media, added with nicotine at different concentrations. It was found that bacterial growth was decreased with the increase of nicotine concentration and duration of its exposure to nicotine. On the other hand, the nicotine-free culture media shows comparatively higher number of bacterial colonies. The genomic DNA content of *Azotobacter sp.*, which was isolated from each of the sets were measured for comparison. The present observation depicts that nicotine can inhibit the growth of soil nitrogen fixing bacteria. The observation indicates the potential risk of nicotine to cause change in the ecological structure of soil.*

Key Words: Nicotine, free-living nitrogen fixing bacteria, growth, inhibition.