

**EFFECT OF ABAMECTIN CONCENTRATION AND TEMPERATURE ON ITS
BIOREMEDIATION BY *Staphylococcus nepalensis***

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Abamectin is widely used in agriculture in controlling insect and other pests. However, its improper use is harmful to the environment due to less specific modes of action. Previously isolated *Staphylococcus nepalensis* bacteria can be used for bioremediation of Abamectin contaminations in soil. Bioremediation ability is dependent upon the level of Abamectin contamination and soil temperature. To test the fluctuation in the ability of the bacterium to bioremediate upon the Abamectin concentrations, flasks containing Mineral Salt Yeast Extract (MSYE) broth supplemented with a series of concentrations (from 10 - 200 mg L⁻¹) of Abamectin were aseptically inoculated with loopful of a 24-hour culture of *Staphylococcus nepalensis*. For each Abamectin concentration triplicate of flasks were inoculated. Growth was tracked at 24-hour intervals, measuring optical density at 600 nm for 72 hours. Uninoculated MSYE broth supplemented with respective Abamectin concentrations were used as controls. To test the effect of temperature the above procedure was repeated keeping flasks incubated at different temperatures (4, 25, 30, 37, 60 °C). The bacteria showed the highest growth in the flask supplemented with 50 mg L⁻¹ of Abamectin. Up to 100 mg L⁻¹ growth increment was in the order of 100 mg L⁻¹ < 10 mg L⁻¹ < 25 mg L⁻¹ < 50 mg L⁻¹. $r(1) = 0.998$, $p < 0.05$, indicates a statistically significant positive correlation between the growth of the organism with Abamectin concentration up to 50 mg L⁻¹. The Bacteria showed the highest growth at 37 °C. Growth increment was in the order of 4 < 25 < 30 < 37 °C. The value of $r(2) = 0.895$, $p > 0.05$, indicates that the correlation between temperature and the growth of the organism is statistically not significant.

Keywords: Abamectin, Bioremediation, MSYE broth, *Staphylococcus nepalensis*