

**Title:** BIOREMEDIATION OF INDUSTRIAL DYE BY OSMOTOLERANT YEAST ISOLATED FROM ANT FUNGI GARDEN *Atta robusta* Borgmeier ( Hymenoptera:Formicidae )

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**Summary:**

Yeasts are unicellular fungi and are present in different environments such as soil, plants and water, besides in symbiotic relationship with various organisms, such as ants. Ant *Atta robusta* species have fungi gardens, where nutrients are quickly and easily assimilated, being described symbiotic relationships with several species of fungi in this environment. These fungi have been studied not only for understanding their role in the populations of these social insects but also to discover their biotechnological potential for substances production of industrial and environmental interest. The present study aimed to assess the biodegradability of industrial dyes by an isolated osmotolerant yeast isolated from ant fungi gardens *Atta robusta*, designated as strain 43. For this, two dyes have been used: remazol brilliant violet and reactive black 5. Assays were performed in 250 ml Erlenmeyer flasks containing Discoloration Normal Medium (DNM) liquid for 3 days. After the bleaching tests, both supernatant and dyes were diluted to 6, 12, 25, 50 and 100% and used for phytotoxicity tests using lettuce seeds (*Lactuca sativa*), and analyzed the germination rate (GR) and the root growth inhibition rate (RGIR). Negative controls were the diluted dyes, and positive control was the distilled water. Isolated 43 showed good discoloration within 24 hours, they remained constant up to 72 hours for both remazol brilliant violet dye and for reactive black 5, reaching 94.5% and 97.3% discoloration rate, respectively. According to the results of GR and RGIR of the phytotoxicity tests, supernatants from both dyes showed, in general, less toxic than their respective controls up to 50% dilution. Undiluted, both supernatants and controls were toxic because there was no germination in any of the tests. This suggests that there was partial biodegradation of dyes whose metabolites, in high concentrations, were phytotoxic.

**Key words:** Fungi, social insect, biodecoloration

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