

**EFFECT OF CHROMIUM ON THE BIOSORPTION OF BASIC FUCHSIN BY
FUNGAL BIOMASS**

ABSTRACT

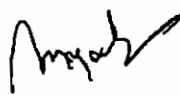
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The present investigation was aimed at obtaining from soils, some fungal strains whose biomass could adsorb dye basic fuchsin from industrial effluents. The soils amended with basic fuchsin were analysed for mycobiota. Attempts were made (a) to find the fungal strains whose biomass was most efficient at biosorption of basic fuchsin, (b) to determine the optimum reaction time, pH and temperature for biosorption by the fungal biomass, (c) to determine best combinations of mycomass for better biosorption, (d) to delineate functional groups involved in the biosorption of basic fuchsin, and (e) to evaluate the impact of the metal (Cr) on biosorption by mycomass. Soil samples were collected from the botanical garden of Ch. Charan Singh University, Meerut. Separate sets of pots containing the soil were treated with different concentrations of basic fuchsin solutions at regular intervals of 7 days till 90 days. The pots treated with distilled water served as control. After 30 days, 60 days and 90 days of treatment, the soils of control pots as well as the dye-treated soils were analysed for mycobiota using dilution plate method. Similar procedure was followed for chromium-treated soils. In all, 43 species of fungi belonging to 23 genera were isolated from control soils as well as those treated with basic fuchsin / chromium for 90 days. Axenic cultures of *Aspergillus flavus* (AF), *Aspergillus niger* (AN) and *Fusarium* sp. were prepared from control (C) soils (i.e., CAF, CAN, CFU) and from soil treated with basic fuchsin solution (BFAF, BFAN, BFFU). Similarly, axenic cultures of *Aspergillus fumigatus* (AFU) and *Verticillium glaucum* (VG) were also prepared as CAFU, CVG from control soils and as MAFU, MVG from metal-treated (M) soils. The biomass of all the ten strains were prepared by inoculating each strain into flasks containing MGYP medium

aseptically, followed by incubation at $27 \pm 2^{\circ}\text{C}$ on B.O.D. shaker for two days. The unadsorbed dye in the supernatant was estimated using a Shimadzu UV spectrophotometer at 544 μm wavelength. The specific uptake (Q value) of basic fuchsin was computed. Maximum biosorption of basic fuchsin by BFAN and BFAF occurred after 15 minutes, MAFU and MVG after 10 minutes only. The state of maximum dye uptake was followed by a decrease in dye uptake, the decrease being more prominent with increasing time up to 25 minutes. Combined mycomass of *A. niger* and *A. flavus* exhibited best performance better than that of *A. niger* and *A. flavus* separately. It was found that Freundlich model could better describe the adsorption of basic fuchsin onto all the four types of mycomass under study with respect to time.



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