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**Responses of bacterial biosorbents to chemical treatment as influenced by
cell membrane structure and impact on dyes adsorption behaviour**

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Abstract

In this study the impact of cell membrane structure and chemical pretreatment on dyes adsorption capacities of Gram-positive and Gram-negative bacteria was investigated; the adsorption was found to occur through a chemisorption mechanism. The adsorption capacity of treated bacteria was higher (68.49 to 161.29 mg/g) than that of the untreated bacteria (9.37 to 29.11 mg/g) during the removal of methylene blue; furthermore, the treatment allowed bacteria to adsorb methyl orange which was not removed by untreated bacteria.

The applied chemical treatment is therefore influenced by the cell membrane structure type and could be considered to improve the adsorption capacity of bacteria for the removal of dyes from polluted water.

Keywords: Dyes water pollution, bioremediation, chemical pre-treatment, cell membrane structure, adsorption affinity