Potential capability of natural biosorbents: *Diplotaxis harra* and *Glebionis coronaria* L. on the removal efficiency of dyes from aqueous solutions

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**ABSTRACT**

This study focuses on the use of natural biomaterials as a good alternative for dyes' removal from aqueous solutions. For this purpose, two local abundant plants *Diplotaxis harra* (*D. harra*) and *Glebionis coronaria* L. (*G. coronaria*) were chosen for the biosorption of methylene blue (MB) as a reference dye molecule due to its potential risk toward the environment and ecosystems, and malachite green (MG) representative of textile dyes. Biosorption experiments were carried out in batch mode as a function of solution pH, biosorbent dosage, contact time, initial dye concentration, and temperature. The experimental results show that the process is very rapid and the biosorption yield increases with an increase in the biosorbent dosage. Maximum biosorption capacity occurred at basic pH medium. The temperature doesn’t have much influence on the biosorption yield. Kinetic data were analyzed using pseudo-first and pseudo-second kinetic orders. Equilibrium data were correlated to Langmuir, Freundlich, Temkin, and Dubinin–Radushkevich isotherm models. The best fit was obtained by Langmuir model with a maximum monolayer biosorption capacity of 185.59 and 64.37 mg/g in the case of *D. harra*, 258.76 and 117.32 mg/g in the case of *G. coronaria* L., respectively, for MB and MG.

*Keywords: Biosorption; Diplotaxis harra; Glebionis coronaria L.; Kinetics; Equilibrium*