

## **BATCH COMPARATIVE STUDY OF SORPTIVE PROPERTIES OF TWO VARIETIES OF ALMOND PEELS FOR BEZANYL RED (ACID DYE) FROM SYNTHETIC AQUEOUS SOLUTIONS**

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### **ABSTRACT**

The ability of two varieties (hard and soft) of almond peels, as inexpensive sorbents for the removal of bezanyl red (acid dye) from synthetic aqueous solutions has been studied. After their characterization by different techniques, (elemental analysis, biochemical analysis, IR spectroscopy, thermogravimetric analysis, scanning electron microscopy and mercury porosimetry), the dye sorption kinetics and equilibrium isotherm have been investigated in batch conditions. The influence of some parameters such as: contact time, initial dye concentration and sorbent variety on dye sorption kinetics, has been studied. Dye uptake was time contact, initial dye concentration and sorbent variety dependent. Two simplified kinetic models including a first-order and a pseudo second-order rate equation were selected to describe the sorption kinetics. Bezanyl red sorption process followed a pseudo second – order rate kinetics. The experimental sorption equilibrium data at natural pH of solution have been analyzed using linearized forms of Langmuir and Freundlich models. The Freundlich model was found to provide an acceptable fit to the experimental data than the Langmuir model whatever the variety of almond peels tested. Low and different maximum dye sorption capacities were obtained about: 8.14 and 14.60 mg/g with soft and hard almond peels respectively under the experimental conditions tested here.

**Keywords:** Removal, Sorption, Bezanyl red, Almond peels.

### **1. INTRODUCTION**

Synthetic dyes are extensively used for dyeing and printing in industries. Their presence in watercourses is aesthetically unacceptable and may be visible at concentration as low as 1 ppm (Rafatullah et al. [1]). Moreover, they may also affect photosynthetic activity in aquatic systems by reducing light penetration (Bielska and