THE EFFECT OF CONTACT TIME ON THE ADSORPTION CAPACITY OF Cu(II) BY PURING LEAF BIOSORBENT (Codiaeum variegatum)

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ABSTRACT

Background: *Biosorbent is a natural material that is able to bind certain substances through adsorption processes, both physically and chemically. Various natural materials have been used as biosorbents, one of which is croton leaves which are rich in flavonoids, allowing chemical interactions with heavy metal ions. The use of biosorbents is a potential solution to overcome heavy metal pollution, such as copper (Cu) which is often found in food and beverages. This study uses an adsorption method to reduce Cu(II) ions in solution by observing the effect of contact time variations on the adsorption capacity.* ***Purpose:*** *The purpose of this study was to determine the effect of contact time on the adsorption capacity of Cu(II) metal by croton leaf biosorbent.* ***Research Method:*** *This study used an experimental method with contact time variations of 15, 30, 45, 60, and 75 minutes, adsorbents measuring 100-200 mesh were contacted with a 5 ppm Cu(II) solution using a stirring speed of 150 rpm. Then the residual Cu(II) content was analyzed using the Atomic Absorption Spectrophotometry (AAS) method. The adsorption capacity was calculated as the ratio between the adsorbed Cu(II) concentration and the mass of the biosorbent and expressed in mg/g.* ***Research Results:*** *The results showed that the adsorption capacity fluctuated with increasing contact time. The adsorption capacity increased to a maximum value of 0.291 mg/g at 60 minutes, which indicated the optimum contact time. After passing this point, the adsorption capacity decreased, presumably due to saturation of the active sites on the biosorbent surface and the possibility of desorption. Thus, a contact time of 60 minutes is the most effective condition in the adsorption process of Cu(II) ions by croton leaf biosorbent.* ***Conclusion****: Based on the results of the study, it can be concluded that the adsorption capacity of Cu(II) metal by croton leaf biosorbent experienced fluctuating changes with variations in contact time with a pattern tending to increase then decrease, the maximum adsorption capacity of 0.291 mg/g was achieved at 60 minutes.*

Keywords: *Cu(II) adsorption, Puring leaf (Codiaeum variegatum), Contact time*