ABSTRACT

BIOSORPTION OF ARTIFICIAL HEAVY METAL CADMIUM (Cd) WASTE USING KEPOK BANANA PEEL BIOADSORBENT WITH CONTACT TIME AND pH VARIATIONS (Stirring Speed 450 rpm)

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Industrial waste causes pollutants in the environment to increase, along with industrial growth that continues to increase. Industrial wastewater can become polluted because it is contaminated with heavy metals. One of the heavy metals that can contaminate waste water is cadmium (Cd). The method currently being developed for the removal of heavy metals is the adsorption technique. The adsorption technique that uses natural materials is called biosorption. One material that has been proven to be used for biosorption is banana peel. In this study, adsorbent from Kepok banana peel was used with the aim of finding out the highest percent adsorption value with variations in contact time of 30 and 60 minutes and pH variations of 4, 5, 6, 7, and 8 in the adsorption of cadmium (Cd) metal using banana peel bioadsorbent Kepok with a stirring speed of 450 rpm. Kepok banana peel was weighed as much as 0,5 gram and mixed with 50 ml of 5 ppm cadmium metal solution. Then stirred using a magnetic stirrer at room temperature at a speed of 450 rpm and filtered, the filtrate was taken to be analyzed quantitatively using an Atomic Absorption Spectrophotometer. Based on research that has been carried out, a stirring speed of 450 rpm with variations in pH and contact time produces the highest percent adsorption value at pH 8, at a contact time of 30 minutes it is 94,52% and at a contact time of 60 minutes it is 95,46%. The statistical test used is the spearman correlation test. The spearman correlation test results obtained Sig. = 0,000 < 0,05 so that in these results there is a significant relationship between pH and the percent adsorption value. The result of the correlation coefficient is positive (+) namely r = 0,985 which indicates a unidirectional correlation, namely the greater the pH the greater the percent adsorption value. The level or degree of relationship between pH and percent adsorption is classified as strong namely 0,6 ≤ ($\left| r \right|$ = 0,985) < 1. The results of the spearman correlation test for variations in contact time with percent adsorption obtained Sig. = 0,071 > 0,05 so that in these result there is no significant relationship between variations in contact time and the percent adsorption value, so that a contact time of 30 minutes is more effective than a contact time 60 minutes.

Key words : Kepok banana peel, biosorption