

ABSTRACT

Allysa Septya Arianti, 2023. *The ability of coffee grounds activated charcoal as Fe (iron) metal adsorbent with certain concentration. Scientific Paper, D3 Pharmaceutical and Food Analysis Study Program, Department of Pharmaceutical and Food Analysis, Politeknik Kesehatan Kemenkes Malang. Supervisor Sandry Kesuma, S.T., M.Si.*

Coffee grounds are the final waste from the coffee brewing process that can be utilized as an adsorbent. One of them is able to absorb iron metal by activating it using hydrochloric acid solution. Activated charcoal made from coffee grounds has been studied to reduce the levels of rodhamin B, ammonia, nitrite, nitrate, cadmium, and copper in the solution. This study aims to determine the adsorption ability of activated charcoal of Arabica coffee grounds activated by 1 N hydrochloric acid (HCl) against iron metal colorimetrically with thiocyanate. Absorption conditions were carried out by adding different arabica coffee grounds activated charcoal, namely, 5 grams, 10 grams, and 15 grams at the same contact period, namely 200 rpm stirring speed for 45 minutes against 50 ppm iron standard test solution and 50 ppm well water test solution. Testing activated charcoal arabica coffee grounds on a 50 ppm iron standard solution is to estimate the remaining iron levels left behind can still be analyzed by a UV-Vis spectrophotometer. While the 50 ppm well water solution to determine the adsorption ability of well water as a sample of the application of activated charcoal coffee grounds. The results showed that the best adsorption conditions against the standard solution of 50 ppm iron occurred in the addition of activated charcoal mass of 15 grams (average iron content left behind 3.197 ppm) and in the test solution of well water containing 50 ppm iron occurred in the addition of activated charcoal mass of 15 grams (iron content left behind 4.03 ppm). While the results of the adsorption capacity of activated charcoal showed the best results in the addition of a mass of 5 grams in both test solutions, namely in the 50 ppm iron standar solution of 1.36 mg/g and in the well water solution of 50 ppm iron of 1.35 mg/g.

Keywords: Coffee grounds waste, activated charcoal, iron metal, adsorption.