

## **KAJIAN FISIKOKIMIA PENAMBAHAN ARANG KAYU PADA MINUMAN TRADISIONAL “KOPI JOS”**

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### **INTISARI**

Studi kajian fisikokimia penambahan arang kayu pada minuman tradisional “kopi jos” telah dilakukan. Penelitian ini bertujuan untuk mempelajari pengaruh penambahan arang terhadap konsentrasi kafein dalam minuman kopi jos, menentukan kinetika adsorpsi kafein, dan menyelidiki perubahan sifat fisika yang terjadi pada kopi jos. Analisis arang kayu sebagai adsorben dilakukan dengan penentuan angka serap iodium dengan metode titrasi iodometri. Penentuan kadar kafein dilakukan dengan metode Bailey-Andrew. Pengaruh waktu kontak terhadap adsorpsi dilakukan dengan pengukuran kadar kafein pada waktu kontak 0, 5, 10, 20, 40, dan 60 menit. Penentuan model kinetika adsorpsi digunakan model kinetika orde satu, orde dua, *pseudo* orde satu dan *pseudo* orde dua. Penyelidikan perubahan sifat fisika dilakukan dengan pengamatan perubahan pola penurunan suhu dan penentuan jumlah abu dari arang yang terbawa dalam air.

Hasil penelitian menunjukkan bahwa arang kayu merupakan adsorben yang baik karena memiliki angkaserap terhadap iodium sebesar 83%. Minuman kopi hitam memiliki kadar kafein sebesar 68,78 mg/100 mL dan minuman kopi jos sebesar 55,13 mg/100mL. Adsorpsi kafein secara optimal terjadi pada menit ke 40 dengan kafein yang terserap sebesar 20,15 mg/100mL. Adsorpsi kafein yang terjadi mengikuti model kinetika *pseudo* orde satu. Adsorpsi kafein pada minuman kopi jos merupakan adsorpsi fisika. Penambahan arang relatif tidak berpengaruh terhadap penampilan fisik dan cita rasa dari minuman kopi jos.

Kata kunci: adsorpsi, arang kayu, Bailey-Andrew, kafein, kopi jos

## PHYSICOCHEMICAL STUDY OF WOOD CHARCOAL ADDITION EFFECT FOR TRADITIONAL BEVERAGE “KOPI JOS”

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### ABSTRACT

Physicochemical study of wood charcoal addition effect for traditional beverage “kopi jos” has been done. The purposes of this research are to studies about the effects of the charcoal addition against the caffeine content at “*kopi jos*” beverage, determine caffeine kinetic adsorption and investigate physical properties changes of “*kopi jos*”. Wood charcoal as adsorbent have been analyzed by determining iodine number which did by iodometric titration method. Caffeine content determine using Bailey-Andrew method. Contact duration effects was analyzed by determining of caffeine content in several duration, there are 0, 5, 10, 20, 40, and 60 minutes. Kinetic adsorption determined by using first order, second order, pseudofirst order and pseudosecond order kinetic models. Physical properties changes are determined by observing the decreasing temperature patterns and determine the amount of solved charcoal ash on water.

The result show that wood charcoal is a good adsorbent since it has adsorption ability against iodine molecule up to 83%. Black coffee beverage contains 68.78 mg/100 mL caffeine and *kopi jos* beverage contains 55.13 mg/100 mL caffeine. Caffeine optimally adsorbed at 40 minutes after first contact, at the optimum condition 20.15 mg/100 mL caffeine adsorbed. This adsorption phenomena followed by the pseudofirst order kinetic model. Caffeine adsorption of *kopi jos* is a physical adsorption. The charcoal addition relatively has no effect on the appearance and taste of *kopi jos* beverage.

Key words: adsorption, Bailey-Andrew, caffeine, *kopi jos*, wood charcoal

