

**PEMANFAATAN LIMBAH PELEPAH DAUN KELAPA
(*Cocos nucifera* Linn) SEBAGAI BAHAN PEMBUATAN ARANG AKTIF**

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INTISARI

Indonesia memiliki potensi bahan baku arang aktif yang cukup besar yang belum dimanfaatkan secara maksimal. Salah satu bahan baku yang berpotensi cukup besar ditinjau dari kualitas hasil dan jumlah bahan baku tetapi belum banyak dimanfaatkan yaitu pelepah daun kelapa (*Cocos nucifera* Linn). Penelitian ini bertujuan untuk mengetahui pengaruh waktu aktivasi, suhu aktivasi, dan interaksi antara keduanya terhadap rendemen dan kualitas arang aktif dari pelepah daun kelapa. Arang aktif dengan kualitas terbaik diaplikasikan untuk penjernihan air sumur.

Penelitian ini menggunakan rancangan acak lengkap yang disusun secara faktorial dengan dua faktor yaitu waktu aktivasi 70 menit, 80 menit, dan 90 menit serta suhu aktivasi yaitu 750°C dan 850°C. Penelitian dilakukan dengan mengarangkan limbah pelepah daun kelapa (*Cocos nucifera* Linn), dalam *retort* listrik pada suhu 400°C selama 3 jam. Proses aktivasi dilakukan secara fisika. Nilai rata-rata dianalisis dengan analisis varians dan apabila berbeda nyata, diuji lanjut dengan uji HSD. Pengujian kualitas arang aktif pelepah daun kelapa berdasarkan Standar Nasional Indonesia.

Hasil penelitian menunjukkan bahwa rendemen berkisar antara 66,330% - 83,990%, kadar air 8,877% - 11,770%, kadar zat mudah menguap 38,015% - 41,638%, kadar abu 16,912% - 18,531%, kadar karbon terikat 31,684% - 33,073%, daya serap uap benzena 10,996% - 13,506%, daya serap iodium 590,085 mg/g - 755,055 mg/g, daya serap metilen biru 130,525 mg/g - 135,702 mg/g. Kualitas arang aktif terbaik dihasilkan dari perlakuan aktivasi pada suhu 850°C selama 90 menit. Arang aktif ini diaplikasikan sebagai penjernihan air sumur. Hasil analisis terhadap air sumur setelah diperlakukan dengan arang aktif kualitasnya menjadi lebih baik dan sebagian memenuhi kriteria sebagai air bersih menurut standar baku mutu Permenkes No. 907 Menkes/SK/VII/2002.

Kata kunci : Arang aktif, *Cocos nucifera* Linn, waktu aktivasi, suhu aktivasi, air sumur

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THE USE OF COCONUT LEAF MIDRIB WASTE (*Cocos nucifera* Linn) AS PRODUCTION MATERIAL OF ACTIVE CARBON

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ABSTRACT

Indonesia has the potential of activated carbon material that is big enough that not fully utilized. One of the raw materials are potentially large enough in terms of quality of results and number of raw materials but not yet widely used is the leaf midrib of coconut (*Cocos nucifera* Linn). This study aims to determine the influence of activation time, activation temperature, and interaction between them on the yield and quality of activated charcoal from coconut leaf midrib. Activated charcoal with the best quality of well water purifier is applied to.

This experiment was conducted with completely randomized designed which stacked factorially consist of two factors, those are 70 minutes activation time, 80 minutes and 90 minutes and also activation temperature such as 750 °C and 850 °C. At first, the coconut leaf midrib waste was carbonized into charcoal in the electric retort, temperature at 400 °C for 3 hours. The activation process conducted as a physics. The average value was analyze with variance analysis and if it 's significant on the differentiation, continued by HSD test. The coconut leaf midrib activated charcoal quality tested was based on Indonesian National Standart.

The result showed that activated charcoal has following characteristics : obtained yield revolve at 66.330% - 83.990%, moisture content 8.877% - 11.770%, volatile matter content 38.015% - 41.638%, ash content 16.912% - 18.531%, fixed carbon content 31.684% - 33.073%, benzene adsorption 10.996% - 13.506%, iodium adsorption 590.085 mg/g – 755.055 mg/g, methylene blue adsorption 130.525 mg/g – 135.702 mg/g. The best activated charcoal quality was produced from the activation treatment on the temperature 850 °C for 90 minutes. This activated charcoal was applied as the water purifier. Based on analysis of well water after treated with activated charcoal quality is getting better and partly meet the criteria as a water quality standard according to Permenkes No. 907 Menkes/SK/VII/2002.

Keywords : activated charcoal, *Cocos nucifera* Linn, activation time, activation temperature, water

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