

## ABSTRAK

Kementerian Kesehatan RI  
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### **PEMANFAATAN ARANG AKTIF KULIT KEDELAI PADA PROSES FILTRASI DALAM MENURUNKAN KADAR FE AIR**

**(xvi + 54 Halaman + 13 Gambar + 5 Tabel)**

Kadar Fe yang berlebih berdampak bagi kehidupan sehingga perlu dilakukan suatu pengolahan seperti filtrasi dengan adsorben berupa arang aktif kulit kedelai. Penelitian ini memiliki tujuan menganalisis variasi waktu kontak arang aktif kulit kedelai pada proses filtrasi dalam menurunkan kadar Fe air bersih.

Desain eksperimen yang digunakan adalah Quasi Eksperimental. Rancangan pada penelitian ini yakni membuat arang aktif kulit kedelai yang akan dikontakkan dengan air sampel dan kemudian dilakukan pengukuran kadar Fe air sebelum dan sesudah perlakuan. Variasi waktu kontak yang digunakan yaitu 10 menit, 30 menit, dan 40 menit dan hasil penurunan kadar Fe dianalisis data dengan uji *One Way Anova*.

Waktu kontak dengan arang aktif kulit kedelai dalam proses filtrasi dapat menurunkan kadar Fe pada air (p-value 0,000). Uji lanjutan menggunakan LSD didapatkan bahwa keseluruhan variasi waktu kontak terdapat perbedaan dengan waktu kontak paling optimal adalah 40 menit. Kualitas arang aktif kulit kedelai dengan parameter kadar air (10,9%) dan kadar abu (8,1%) memenuhi standar sesuai SNI 06 3730 1995 . Persentase penurunan kadar Fe pada waktu kontak 10 menit 4,12%, waktu kontak 30 menit 35%, dan waktu kontak 40 menit 75%. Pada uji FTIR didapatkan gugus O-H dan C=C yang menunjukkan sifat polar dan memiliki kadar kemurnian unsur karbon yang tinggi sehingga potensial dijadikan sebagai arang aktif.

Kulit kedelai dapat dijadikan sebagai opsi pembuatan media arang aktif dikarenakan kemampuannya untuk menurunkan kadar Fe air. Dalam pemakaian arang aktif perlunya memperhatikan waktu keefektifan yakni antara 3 bulan hingga 6 tahun.

**Kata Kunci** : Fe, arang aktif kulit kedelai, filtrasi, waktu kontak

**Daftar Pustaka** : 46 (2009-2022)

## ABSTRACT

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### **UTILIZATION OF SOYBEAN SKIN ACTIVATED CARBON IN THE FILTRATION PROCESS TO REDUCE Fe LEVEL OF WATER**

**(xvi + 54 Pages + 13 Figures + 5 Tables)**

The excessive Fe level affected life so it is necessary to do a process such as filtration with an adsorbent formed by activated carbon of soybean skin. The research aims to analyze the variation in the time of contact of activated carbon of soybean skin on the filtration process to reduce the level of Fe level on water.

The experimental design is used in this research is experimental. The plan for this study is to make activated carbon of soybean skin that will be contacted with sample water and then do a measurement the Fe level of water before and after treatment. The variation of contact time used was 10 minutes, 30 minutes, and 40 minutes and the result of the Fe level of water's decrease was analyzed by One Way Anova.

The time of contact with activated carbon of soybean skin in the filtration process can reduce the Fe level of the water (*p-value* 0,000). Advanced test is used LSD and from the test found that the overall variation of contact time was different with the optimal is contact time of 40 minutes. The quality of activated carbon of soybean skin with parameter of water content (10.9%) and parameter of ash content (8.1%) was qualified the standards according to SNI 06 3730 1995. The percentage decrease in Fe levels of water at 10 minute was 4.12%, contact time at 30 minutes was 35%, and contact time 40 minutes was 75%. In the FTIR test, the O-H and C=C groups were obtained which showed polar characteristic and had a high level of purity of carbon elements so that could be used as activated carbon

The soybean skin could be used as an option for activated carbon 'cause of its ability to reduce Fe level of water. When using this activated carbon it is necessary to maintenance the duration of effectiveness between 3 months to 6 years.

**Keywords** : Fe, soybean skin activated carbon, filtration, contact time

**Reading List** : 46 (2009-2022)