

DIFFERENCES IN FILTER A AND FILTER B COMBINATIONS
FOR REDUCING IRON LEVELS IN WATER

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ABSTRACT

Background of study : *Water is a vital necessity for life, including its role in metabolism and the absorption of essential nutrients. However, high levels of iron (Fe) in water can cause health problems, making regular monitoring of water quality essential to ensure that concentrations do not exceed the permissible limit of 0.2 mg/L as stated in the Ministry of Health Regulation No. 2 of 2023. A preliminary study in Ngemplak revealed an Fe concentration of 2 mg/L, which is far above the standard. One potential solution is the use of filtration media such as ferrolite and Malang sand. Based on these conditions, this study focuses on “The Difference Between Filter A and Filter B Combinations in Reducing Iron Levels in Water.”*

Aim of study : *To determine the effectiveness of Filter A and Filter B in reducing iron levels in water.*

Research method : *This study employed a quasi-experimental design. It employed a one-group pre-posttest design. The research location was a dug well at a resident's home. Data collection was conducted using grab sampling. Data analysis was conducted descriptively.*

Results : *The results of the study showed that Malang sand was very effective in reducing Fe levels in clean water, as indicated by a decrease in filter A (ferrolite–Malang sand) reducing Fe levels from 2.037 mg/l to 0.059 mg/l (97% efficiency), while filter B (zeolite–Malang sand) reduced it to 0.033 mg/l (98% efficiency).*

Conclusion : *Both Filter A (ferrolite–Malang sand) and Filter B (zeolite–Malang sand) were effective in reducing Fe levels to below the quality standard with high efficiency; however.*

Keywords: *Water Treatment, Filtration, Zeolite, Ferrolite, Malang Sand*

PERANDINGAN KOMBINASI FILTER A DAN FILTER B UNTUK
MENURUNKAN KADAR BESI DALAM AIR

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INTISARI

Latar Belakang : Air merupakan kebutuhan vital bagi kehidupan, termasuk metabolisme tubuh dan penyerapan zat esensial. Namun, kandungan besi (Fe) yang tinggi dalam air dapat menimbulkan masalah kesehatan, sehingga pemantauan kualitas air diperlukan agar tidak melebihi ambang batas 0,2 mg/l sesuai Permenkes No. 2 Tahun 2023. Studi pendahuluan di Ngemplak menunjukkan kadar Fe mencapai 2 mg/l, jauh di atas standar. Salah satu solusi adalah penggunaan media filtrasi, seperti ferolit dan pasir malang. Berdasarkan kondisi tersebut, penelitian ini berfokus pada “Perbedaan Kombinasi Filter A dan Filter B untuk Menurunkan Kadar Besi dalam Air.”.

Tujuan : Mengetahui efektivitas Filter A dan Filter B dalam menurunkan kadar besi dalam air.

Metode : Penelitian ini menggunakan jenis penelitian *Quasi Experiment*. Penelitian ini menggunakan desain penelitian *one group pre-posttest design*. Lokasi penelitian ini dilakukan sumur gali rumah warga. Metode pengumpulan data secara sesaat atau *grab sampling*. Analisis data dilakukan secara deskriptif.

Hasil : Hasil penelitian menunjukkan bahwa pasir malang sangat efektif dalam menurunkan kadar Fe dalam air bersih yang ditunjukkan dengan penurunan filter A (ferolite–pasir malang) menurunkan kadar Fe dari 2,037 mg/l menjadi 0,059 mg/l (efisiensi 97%), sedangkan filter B (zeolit–pasir malang) menurunkan menjadi 0,033 mg/l (efisiensi 98%).

Kesimpulan : filter A (ferolite–pasir malang) maupun filter B (zeolit–pasir malang) sama-sama efektif menurunkan kadar Fe hingga di bawah baku mutu dengan efisiensi tinggi.

Kata Kunci: Penyehatan Air, Filtrasi, Zeolit, Ferolite, Pasir Malang