EFFECTIVENESS OF VARIATIONS OF FERROLITE MEDIA, ROOF TILE FRAGMENTS, AND SAND IN REDUCING IRON (FE) LEVELS IN WELL WATER IN MORANGAN HAMLET, SINDURMATANI, NGEMPLAK, SLEMAN

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ABSTRACT

Background: Well water in one of the residents of Morangan, Ngemplak contains iron (Fe) of 3.1 mg/L. Water containing iron (Fe) needs to be treated, one of the treatments is the filtration method. Filtration uses a variety of ferrolite media, broken tile, and sand with a thickness of 30 cm for each media.

Objective: Knowing the effectiveness of variations of ferrolite filter media, broken tile, and sand in reducing iron (Fe) levels in well water in Morangan Hamlet.

Methods: This type of research uses Quasi Experiment with Pre Test - Post Test Design With Control Group. The study was conducted 6 times repetition with a total sample of 30.

Results: The decrease in iron (Fe) from 3.1 mg/L in filter A to 0.62 mg/L with a difference of 2.48 mg/L or 85%, filter B to 0.23 mg/L with a difference of 2.87 mg/L or 92.5%, filter C to 0.45 mg/L with a difference of 2.85 mg/L or 91.8%, and filter D to 2.64 mg/L with a difference of 0.46 mg/L or 15%. The One Way Anova test results get a p-value of 0.000, there is a difference between the media variations used. LSD test results, filter B is a filter that reduces the highest iron (Fe) levels.

Conclusion: The use of three types of filters can reduce iron levels, however, it is not effective in reducing iron (Fe) levels to meet the quality standard of 0.2 mg/L according to Permenkes Number 2 of 2023.

Keywords: Iron (Fe), Media variations, Filter media, Ferrolite, Roof tile fragments, Sand

EFEKTIVITAS VARIASI MEDIA FERROLITE, PECAHAN GENTENG, DAN PASIR DALAM MENURUNKAN KADAR BESI (FE) AIR SUMUR DI DUSUN MORANGAN, SINDURMATANI, NGEMPLAK, SLEMAN

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INTISARI

Latar belakang: Air sumur disalah satu warga Morangan, Ngemplak mengandung besi (Fe) sebesar 3,1 mg/L. Air yang mengandung zat besi (Fe) perlu diolah, salah satu pengolahan dengan metode filtrasi. Filtrasi menggunakan variasi media ferrolite, pecahan genteng, dan pasir dengan ketebalan masing – masing media 30 cm.

Tujuan: Mengetahui efektivitas variasi media filter ferrolite, pecahan genteng, dan pasir dalam menurunkan kadar besi (Fe) air sumur di Dusun Morangan.

Metode: Jenis penelitian menggunakan Quasi Experiment dengan Desain *Pre Test – Post Test With Control Group.* Penelitian dilaksanakan 6 kali pengulangan dengan jumlah sampel 30.

Hasil: Penurunan besi (Fe) dari 3,1 mg/L pada filter A menjadi 0,62 mg/L dengan selisih sebesar 2,48 mg/L atau 85%, filter B menjadi 0,23 mg/L dengan selisih sebesar 2,87 mg/L atau 92,5%, filter C menjadi 0,45 mg/L dengan selisih sebesar 2,85 mg/L atau 91,8%, dan filter D menjadi 2,64 mg/L dengan selisih sebesar 0,46 mg/L atau 15%. Hasil uji *One Way Anova* mendapatkan *p-value* 0,000, terdapat perbedaan antara variasi media yang digunakan. Hasil uji LSD, filter B merupakan filter yang menurunkan kadar besi (Fe) paling tinggi.

Kesimpulan: Penggunaan tiga jenis filter dapat menurunkan kadar besi namun, tidak efektif dalam menurunkan kadar besi (Fe) hingga memenuhi baku mutu yaitu 0,2 mg/L sesuai Permenkes Nomor 2 Tahun 2023.

Kata kunci: Besi (Fe), Variasi media, Ferrolite, Pecahan genteng, Pasir