PERBEDAAN KADAR MANGAN (Mn) SEBELUM DAN SESUDAH PENGOLAHAN MENGGUNAKAN FILTER MULTIMEDIA PADA SUMUR BOR DI RSUD KABUPATEN TEMANGGUNG

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ABSTRAK

Latar Belakang: Mangan (Mn) merupakan salah satu logam yang secara alami terdapat dalam air tanah. Keberadaan mangan dapat memengaruhi kualitas air, seperti menyebabkan perubahan warna, endapan, dan noda pada instalasi perpipaan. Salah satu metode pengolahan yang dapat digunakan untuk menurunkan kadar mangan adalah filtrasi menggunakan filter multimedia.
Tujuan: Mengetahui kadar mangan sebelum dan sesudah pengolahan menggunakan filter multimedia pada air Sumur Bor 1 di RSUD Kabupaten Temanggung.
Metode: Penelitian ini merupakan penelitian kuantitatif dengan desain *quasi experiment* menggunakan rancangan *Non-equivalent Control Group Design*. Kelompok eksperimen menggunakan filter multimedia yang terdiri atas pasir silika, ferrolite, dan *manganese greensand*, sedangkan kelompok kontrol menggunakan filter pasir halus. Pemeriksaan kadar mangan dilakukan menggunakan *InscienPro Photometer* ZE 200 terhadap 20 sampel. Analisis perbedaan filtrasi menggunakan uji *Wilcoxon Signed Rank Test dan Mann-Whitney U Test.*
Hasil: Rata-rata kadar mangan pada kelompok eksperimen menurun dari 0,0158 mg/L menjadi 0,001 mg/L, sedangkan pada kelompok kontrol menurun dari 0,0168 mg/L menjadi 0,01 mg/L. Rata-rata persentase penurunan kadar mangan menggunakan filter multimedia sebesar 96,66%, sedangkan filter pasir halus (kontrol) sebesar 35,8%. Hasil uji *Wilcoxon Signed Rank Test* dan *Mann-Whitney U Test* menunjukkan bahwa penurunan kadar mangan pada kedua kelompok maupun perbedaan antara kedua kelompok tidak signifikan secara statistik ($p > 0,05$).
Kesimpulan: Terdapat perbedaan kadar mangan (Mn) sebelum dan sesudah pengolahan menggunakan filter multimedia pada air Sumur Bor 1 RSUD Kabupaten Temanggung. Kadar mangan setelah pengolahan lebih rendah dibandingkan sebelum pengolahan, namun perbedaan tersebut tidak signifikan secara statistik.

Kata Kunci : filter multimedia, mangan, air sumur, ferrolite, *manganese greensand*.

DIFFERENCES IN MANGANESE (Mn) LEVELS BEFORE AND AFTER TREATMENT USING A MULTI MEDIA FILTER IN BORE WELL WATER AT TEMANGGUNG REGENCY PUBLIC HOSPITAL

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ABSTRACT

Background: *Manganese (Mn) is a naturally occurring metal commonly found in groundwater. The presence of manganese can affect water quality by causing discoloration, sediment formation, and stains on water distribution systems. One of the treatment methods that can be used to reduce manganese concentration is multimedia filtration.*
Objective: *This study aimed to determine manganese concentrations before and after treatment and to analyze the difference in manganese concentrations before and after treatment using a multimedia filter on bore well water No. 1 at Temanggung regency public hospital.*
Methods: *This study employed a quantitative approach with a quasi-experimental design using a Non-equivalent Control Group Design. The experimental group used a multimedia filter consisting of silica sand, ferrolite, and manganese greensand, while the control group used a fine sand filter. Manganese concentrations were measured using an InscienPro Photometer ZE 200 on 20 water samples. Data were analyzed using the Wilcoxon Signed Rank Test and Mann–Whitney U Test.*
Results: *The mean manganese concentration in the experimental group decreased from 0.0158 mg/L to 0.0010 mg/L, while in the control group it decreased from 0.0168 mg/L to 0.0100 mg/L. The average percentage reduction in manganese concentration was 96.66% using the multimedia filter and 35.8% using the fine sand filter (control). The results of the Wilcoxon Signed Rank Test and Mann–Whitney U Test indicated that the reduction in manganese concentration within both groups, as well as the difference between the two groups, was not statistically significant ($p > 0.05$).*
Conclusion: *There was a difference in manganese (Mn) concentrations before and after treatment using a multimedia filter on groundwater from Well No. 1 at Temanggung Regency Public Hospital. The manganese concentration after treatment was lower than before treatment; however, the difference was not statistically significant.*

Keywords: *multimedia filter, manganese, bore well water, ferrolite, manganese greensand*