

PENURUNAN KADAR ION Fe^{2+} DALAM AIR DENGAN SERBUK ZEOLIT ZSM-5 1,00 % b/v BERDASARKAN VARIASI pH SELAMA 60 MENIT

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ABSTRAK

Air merupakan salah satu sumber daya alam yang sangat diperlukan oleh semua makhluk hidup, namun air banyak tercemar oleh logam misalnya besi. Standar maksimum besi dalam air minum adalah 0,3 mg/L menurut Permenkes RI No.492/Menkes/Per/IV/2010. Kadar ion (Fe^{2+}) dapat diturunkan dengan serbuk zeolit ZSM-5 berdasarkan variasi pH larutan Fe^{2+} karena serbuk zeolit ZSM-5 memiliki sifat seperti adsorpsi, sehingga mampu menyerap kandungan logam Fe^{2+} dalam air. Jenis penelitian yang akan dilakukan adalah eksperimen. Tujuan dari penelitian ini adalah mengetahui pengaruh variasi pH larutan Fe^{2+} setelah penambahan serbuk zeolit ZSM-5 dengan lama pengadukan 60 menit terhadap penurunan besi (Fe^{2+}) dalam air. Penelitian dilakukan di Laboratorium Kimia Fakultas Ilmu Keperawatan dan Kesehatan, Universitas Muhammadiyah Semarang, Jl. Kedungmundu Raya No.18, Semarang. Waktu penelitian dimulai bulan November 2015 sampai Agustus 2016. Objek penelitian larutan Fe^{2+} dengan konsentrasi 50 ppm. Hasil penelitian diperoleh Fe^{2+} awal 49,14 mg/L. Prosentase penurunan kadar ion Fe^{2+} lama pengadukan 60 menit, variasi pH 1,0; 1,5; 2,0; 2,5; 3,0 berturut-turut adalah 23,37%, 26,80%, 27,83%, 46,65%, 48,42%. Prosentase penurunan kadar ion Fe^{2+} tertinggi pada pH=3 yaitu 48,42%. Ada pengaruh penambahan serbuk zeolit ZSM-5 1,00% b/v berdasarkan variasi pH larutan Fe^{2+} dan lama pengadukan 60 menit terhadap prosentase penurunan ion besi (Fe^{2+}) dalam air.

Kata kunci : air, ion besi (Fe^{2+}), variasi pH , ZSM-5

ION LEVEL LOWERING Of Fe²⁺ In WATER By ZEOLITE ZSM-5 POWDER 1,00 % w/v pH VARIATIONS BASED On FOR 60 MINUTES

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ABSTRACT

Water is a natural resource that is very much needed by all living creature, however a lot of water has been contaminated by some metal such as iron. Due to the government regulation Permenkes RI number 492/MENKES/Per/IV/2010, it is said that the maximum standard of iron in drinking water is 0,3 mg/L. The iron concentration of iron (Fe²⁺) can be lowered by the zeolite ZSM-5 powder based on the pH variations of Fe²⁺ solution, it is because zeolite powder ZSM-5 has adsorb character, so it can adsorb the metal solution of Fe²⁺ in water. This research is a kind of experiment. The purpose of this research is to note the effect of the pH variations of Fe²⁺ solutions after the adding of zeolite ZSM-5 powder, which is steering in 60 minutes to the lowering of iron substance (Fe²⁺) in the water. This research is observed in the Chemical Laboratory of the Health and Nursing Faculty of Muammadiyah University of Semarang, at 18 Kedungmundu main road, Semarang. The time of research is begun from November 2015 to August 2016. The object of research Fe solution in 50 ppm concentration. The result we gained is the earlier Fe²⁺ is 49,14 mg/L. The lowering percentage of the Fe²⁺ concentration in which 60 minutes steering the pH variation is 1,0; 1,5; 2,0; 2,5; 3,0 is consequently sequence 23,37%, 26,80%, 27,83%, 46,65%, 48,42%. The highest level of lowering percentage of Fe²⁺ ion concentration on pH = 3,0 namely 48,42%. There was effect on addition of Zeolite powder ZSM-5 1,00% w/v based on the pH variation of Fe²⁺ solution and the duration of 60 minutes steering to the decrease of lowering percentage of iron ion (Fe²⁺) in water.

Keywords : water, the iron ions (Fe²⁺), pH variations, ZSM-5