Biosorpsi timbal oleh biomassa daun ketapang (terminalia catappa L) = Lead biosorption using biomass from ketapang leafs terminalia catappa l

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Abstrak

[ABSTRAK
Limbah yang mengandung logam berat timbal (Pb) sangat berbahaya bagi lingkungan. Selama ini beberapa proses pengolahan telah diperkenalkan untuk mengolah limbah, dari proses pengendapan, hingga menggunakan resin penukar ion. Daun ketapang telah di gunakan sebagai media pengolahan air yang digunakan untuk akuarium. Para peneliti telah menunjukkan daun ketapang berpotensi sebagai pengolah air limbah. Penelitian ini bertujuan untuk mengetahui potensi biosorpsi daun ketapang pada limbah yang tercemar logam berbahaya, dengan mempelajari karakteristik biosorpsi, kesetimbangan, kinetika dan termodinamika. Kondisi optimum seperti pH, dosis daun ketapang, waktu kontak dan suhu akan di amati pada penelitian ini. Hasil Penelitian Biomassa daun ketapang berpotensi sebagai biosorben, dengan perlakuan asam atau basa, daun ketapang ini masih memberikan % adsorpsi yang kompetitif dengan daun ketapang yang diperlakukan asam. Penyerapan sangat dipengaruhi oleh pH , konsentrasi ion Pb, massa adsorben, waktu kontak dan suhu, yang berurutan nilai maksimum nya adalah pH 3, konsentrasi ion Pb 5 mg/L, massa adsorben 0,5 gram, waktu kontak 4 jam, dan suhu 40 oC. Laju reaksi berjalan pada orde satu dan memenuhi kaidah isotermal Freundlich serta Langmuir. Daun ketapang dengan perlakuan diasamkan memiliki keunggulan dibandingkan daengan daun ketapang murni dan daun ketapang dibasakan.
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ABSTRACT
Waste containing of lead (Pb) is very dangerous for environment. However, waste treatment process has been introduced to minimize the waste, either by precipitation process or ionic exchange resin. In addition, researchers have shown that ketapang leaves (Terminalia Catappa) can be potentially used in waste water treatment. It has been used as water treatment media for fresh water aquarium. Moreover, this research is aimed to find out the potential of ketapang leaves biosorption for waste that has been polluted by dangerous metal, such as lead, by investigating the characteristics of biosorption, balance, kinetics and thermodynamics. Maximum conditions of pH, ketapang leaves dose, contact time, and temperature were also investigated in this research. The result shows that biomass of ketapang leaves is potential to be biosorbent, and with regard to acid or base reaction it still has potential to be biosorbent. Nevertheless, the absorbtion

is really dependent to pH, Pb concentration, adsorbent mass, contact time, and temperature, in which the maximum limits are 3; 5 mg/L; 0.5 gram; 4 hours; 400C; respectively. Reaction rate, moreover, was running on first order and was fulfilled the principle of Freundlich as well as Langmuir. Ketapang leaves with acidified treatment has advantages over the pure ketapang leaves and leaf ketapang basified.;Waste containing of lead (Pb) is very dangerous for environment. However, waste treatment process has been introduced to minimize the waste, either by precipitation process or ionic exchange resin. In addition, researchers have shown that ketapang leaves (Terminalia Catappa) can be potentially used in waste water treatment. It has been used as water treatment media for fresh water aquarium. Moreover, this research is aimed to find out the potential of ketapang leaves biosorption for waste that has been polluted by dangerous metal, such as lead, by investigating the characteristics of biosorption, balance, kinetics and thermodynamics. Maximum conditions of pH, ketapang leaves dose, contact time, and temperature were also investigated in this research. The result shows that biomass of ketapang leaves is potential to be biosorbent, and with regard to acid or base reaction it still has potential to be biosorbent. Nevertheless, the absorbtion is really dependent to pH, Pb concentration, adsorbent mass, contact time, and temperature, in which the maximum limits are 3; 5 mg/L; 0.5 gram; 4 hours; 400C; respectively. Reaction rate, moreover, was running on first order and was fulfilled the principle of Freundlich as well as Langmuir. Ketapang leaves with acidified treatment has advantages over the pure ketapang leaves and leaf ketapang basified., Waste containing of lead (Pb) is very dangerous for environment. However, waste treatment process has been introduced to minimize the waste, either by precipitation process or ionic exchange resin. In addition, researchers have shown that ketapang leaves (Terminalia Catappa) can be potentially used in waste water treatment. It has been used as water treatment media for fresh water aquarium. Moreover, this research is aimed to find out the potential of ketapang leaves biosorption for waste that has been polluted by dangerous metal, such as lead, by investigating the characteristics of biosorption, balance, kinetics and thermodynamics. Maximum conditions of pH, ketapang leaves dose, contact time, and temperature were also investigated in this research. The result shows that biomass of ketapang leaves is potential to be biosorbent, and with regard to acid or base reaction it still has potential to be biosorbent. Nevertheless, the absorbtion is really dependent to pH, Pb concentration, adsorbent mass, contact time, and temperature, in which the maximum limits are 3; 5 mg/L; 0.5 gram; 4 hours; 400C; respectively. Reaction rate, moreover, was running on first order and was fulfilled the principle of Freundlich as well as Langmuir. Ketapang leaves with acidified treatment has advantages over the pure ketapang leaves and leaf ketapang basified.]