

عنوان مقاله:

Influence of parameters and kinetic study of nickel (II) and cadmium (III) metals on Dalbergia derived adsorbent

محل انتشار:

مجله بین المللی تحقیقات اپیدمیولوژیک، دوره 4، شماره 2 (سال: 1396)

تعداد صفحات اصل مقاله: 11

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خلاصه مقاله:

Background and aims: From the past studies, it has been proved that consumption of heavy metals by humans may cause several chronicle problems like cancer, kidney and liver damage, high blood pressure and low blood pressure problems and etc. So, it has become very crucial to remove these heavy metals from industrial wastewater. The aim of this study was to find out a low cost and easy available adsorbent for adsorption of heavy metals. Methods: Batch removal study of nickel and cadmium metal ions from their salt solutions was used. Preparation of adsorbent was done by following chemical treatment method and finally dried product obtained was characterized through FT-IR and morphological study. Influence of parameters initial metal ion concentration, pH and adsorbent dosage were done by varying one factor remaining others fixed. Equilibrium study at different temperatures while concentration fixed and kinetic study to know efficiency of adsorbent were done. Results: Influence of parameters gives optimum range for adsorption as pH gives 6.8 and 0.2 g for adsorbent dose. Adsorption isotherm well explained by Temkin isotherm as it gives positive value for calculating constants and high correlation coefficient 0.99. Kinetic behavior well followed by Pseudo second order, Intraparticle diffusion and Elovich second order kinetic models. Further, several thermodynamics parameters like ΔS° , ΔH° and ΔG° were predicted. The value of ΔG° predicted at different temperatures, highlighted the spontaneity. Conclusion: Dalbergia proved as a low cost and efficient adsorbent

کلمات کلیدی:

Adsorption, Dalbergia, Nickel ion, Cadmium ion, heavy metals

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