

Adsorptive removal of Cr(VI) and Ni(II) using adsorbent based on thermo-chemical activation of Syzygium cumini seeds

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In this study, a new activated carbon prepared from non-usable Syzygium cumini seeds has been used as an efficient low cost adsorbent to remove Cr(VI) and Ni(II) toxic metal from aqueous phase. Batch mode experiments have been performed as a function of initial pH of solution, adsorbate concentration and adsorbent dosage. Maximum chromium removal was found at pH 6.0 in equilibrium time of 30 minutes. The sorption data fitted well with Langmuir as well as Freundlich adsorption model. Evaluation using Langmuir equation gave the monolayer sorption capacity as 8.79 and 9.23 mg/g for Cr(VI) and Ni(II), respectively. The results obtained in this study illustrate that the Syzygium cumini seed activated carbon is an effective and economically viable adsorbent for removal of Cr(VI) and Ni(II).