Biosorption of radiotoxic 90Sr by green adsorbent: dry cow dung powder

by Nisha Suresh Barot; Hemlata Kapil Bagla (Kishinchand Chellaram College, Mumbai, Maharashtra (India). Department of Nuclear and Radiochemistry)

[en] The present investigation entails the biosorption studies of radiotoxic Strontium (90Sr), from aqueous medium employing dry cow dung powder (DCP) as an indigenous, inexpensive and, eco-friendly material without any pre or post treatments. The Batch experiments were conducted employing 90Sr(II) as a tracer and the effect of various process parameters such as optimum pH, temperature, amount of resin, time of equilibration, agitation speed and concentration of metal ions have been studied. The kinetic studies were carried out employing various models but the best fitting model was Lagergren pseudo-second order model with high correlation coefficient R2 value of 0.999 and cation exchange capacity of DCP was found to be 9.00 mg/g. The thermodynamic parameters for biosorption were evaluated as ΔG deg -5.560 kJ/mol, ΔH deg = -6.396 kJ/mol and ΔS deg = 22.889 J/mol K, which indicated spontaneous and exothermic process with high affinity of Sr(II) for DCP. (author)

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