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## CHROMIUM (VI) SORPTION EMPLOYING *Sphyraena jello* DERIVED COLLAGEN/POLY (VINYL ALCOHOL) HYDROGEL

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### Abstract

Collagen, an adhesive protein, possesses amino groups, which can act as binding sites of metal adsorption. Collagen, along with poly(vinyl alcohol), forms a copolymer enhancing the stability of collagen, better suits as an adsorbent for chromium (VI) ions. The collagen isolated from muscles of *Sphyraena jello* was detected using polyacrylamide electrophoresis. Synthesized collagen with poly(vinyl alcohol) prepared as hydrogel blend and analyzed for its porous structure, functional groups and crystalline nature. Various physical variables like pH, time of contact, collagen/PVA dose and thermal changes were optimized for maximum elimination of Chromium (VI) ions. Pseudo-second order kinetics is more reliable when compared with pseudo-first order. Isotherms were fitted to different chromium concentrations, and the maximal monolayer biosorption ability was perceived as 17.035 milligrams per gram of collagen/PVA blend. Thermodynamic variables were studied and the reaction was spontaneous. The experimental results prove that chromium ions could be better removed using a collagen/PVA blend. Henceforth, the derived collagen blended with poly(vinyl alcohol) could serve as a promising biosorbent for the removal of chromium (VI) ions.

**Key words:** collagen, Chromium (VI) ions, FTIR, SEM, *Sphyraena jello*, XRD

Received: January, 2023; Revised final: February, 2023; Accepted: May, 2023; Published in final edited form: May, 2023

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