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Removal of arsenic from aqueous solution using SiO_2 nanoparticles doped carbonized *Zygosaccharomyces bailli*

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Abstract: The present study involves the development of adsorbent containing silica oxide nanoparticles for arsenate removal using the reducing property of a novel yeast strain *Zygosacchromyces bailli* (MTCC 8177) isolated from a tea fungus consortium. The yeast cells were harvested and subjected to carbonization at 400 °C for 1 hour and doped with silica oxide nanoparticles to improve its adsorbent properties. Batch adsorption studies were carried out using the carbonized yeast doped with silica nanoparticles (CYDSN). As(V) adsorption efficiency of CYDSN was deduced in batch mode by varying parameters like contact time, initial concentration, adsorbent dosage and pH. Equilibrium isotherms were analyzed by Langmuir, Freundlich and Temkin isotherms and the experimental data fitted well into these isotherms. Kinetics of the adsorption process was studied and it was fitted into the Langergren kinetic studies. The results indicated that CYDSN could be used as an viable and cost-effective adsorbent for As(V) removal from aqueous solution.

Keywords: *Zygosacchromyces bailli*, As(V) removal, Doping, Silica oxide nanoparticles, Adsorption.

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