



The Potency of Baker's Yeast (*Saccharomyces cerevisiae*) As Biosorption Agent of Cadmium and Chromium in *Kindirmo* in Kano State, Nigeria.

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Abstract

Heavy metals in food, presents a threat to food safety and human health due to their high toxicity which can cause severe illness and death. *Kindirmo* is a traditional fermented milk product similar to yoghurt, which is widely consumed in Nigeria. The application of biosorbents like bacteria, yeast, and algae is a method of heavy metal decontamination in foods and water. In this study, *Kindirmo* was produced with baker's yeast (*S. cerevisiae*). Furthermore, the *kindirmo* was intentionally spiked with Cadmium and Chromium separately and in combination in different concentrations of 50, 60, 70, 80, 90 and 100 µg/ml. The efficacy of the yeast in decontaminating the fermented milk product was assayed using Atomic Absorption Spectrometry to detect the residual metals after 4, 8, 12 and 16 hours. The highest removal was noted at the first 4 hours in 50 µg/ml concentration with 76 % efficiency, showing a rapid onset removal for Cadmium. At 90 µg/ml in 16 hours 70 % removal was achieved which was the highest removal rate in Chromium. The removal rate in combination was at 35 µg/ml where Chromium was totally removed, while over 80 % of Cadmium was removed at 45 µg/ml. For both metals, there was higher removal affinity at 8-16 hours, showing a prolonged biosorption process. This study has shown that *S. cerevisiae* has great potential for chromium and cadmium removal from *Kindirmo*, and is a green environmental friendly tool for heavy metal decontamination.

Keywords: *Kindirmo*, *Saccharomyces cerevisiae*, chromium, cadmium, biosorption, decontamination

