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Study of the Biosorption Ability of a Yeast Isolate from Acid Mine Drainage (AMD)

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ABSTRACT

Acid mine drainages (AMDs) contaminated with heavy metals pose a significant environmental challenge. Today, various strategies are employed to combat heavy metal pollution, including using microorganisms for bioremediation. Among these strategies, biosorption by microorganisms, particularly yeasts, has emerged as a promising approach for removing heavy metals from the environment. This study aimed to isolate and characterize a yeast strain collected from Kavart tailing site, with potential biosorption capacity, focusing on copper (Cu^{2+}) and zinc (Zn^{2+}) at varying pH levels (2, 4, and 6). The biosorption of Cu^{2+} showed the highest removal efficiency at pH 6, with approximately 71.5% metal removal at 3 g/L biomass concentration. The Zn^{2+} biosorption was less efficient, with a maximum removal of 29.3% at pH 6. However, further research will focus on optimizing biosorption conditions and understanding the mechanisms of metal binding to yeast cells.

Keywords: green technologies, biosorption, bioremediation, yeast, heavy metals

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