5th World Congress on Climate Change and Ecosystem

March 26-27, 2026 | Paris, France

Mycosorbent alternaria jacinthicola ad2 as a sustainable alternative for the removal of metallic pollutants from industrial effluent

Anjali Vijay Prajapati
Gujarat University, India

Industrial effluents pose a significant concern because they contain a variety of metals and metalloids that have detrimental effects on the environment. Conventional techniques are widely used in effluent treatment plants (ETPs) to remove metallic pollutants; however, they are less effective, are costly, and generate secondary toxic waste. Mycosorbent would be a sustainable and economical alternative to conventional techniques, as it offers numerous advantages. In this study, we shed light on the development of mycosorbent, which could be potentially applicable in the treatment of industrial effluent. In a competitive (i.e., multi-metal system) optimisation study, mycosorbent AD2 exhibited a maximum biosorption capacity of 3.7 to 6.20 mg/g at pH 6.0, with an initial metal ion concentration of 25 mg/L, a contact time of 2 h, at 50 ± 2 °C, and a pHPZC of 5.3. The metal-removal capacity increased up to 1.23-fold after optimization. The thermodynamic parameters confirmed that the AD2 mycosorbent facilitated an endothermic, feasible, and spontaneous biosorption process. The FT-IR and SEM characterisation analysis confirmed the adsorption of metals on the surface of the mycosorbent from the aqueous system. This study demonstrated that mycosorbent could be an effective tool for combating metallic pollutants in various industrial effluents

Biography

Anjali Vijay Prajapati is an enthusiastic and resourceful Environmental Microbiologist dedicated to ground-breaking sustainable resource recovery from complex waste streams. Her reflective expertise centers on the bio-hydrometallurgical techniques of bioleaching and biosorption (specifically Mycosorption and Phycosorption) for the green removal and recovery of heavy metals from domestic solid waste and aquatic environments. This work establishes an eco-friendly, cost-effective alternative to energy-intensive conventional methods. Dr. Prajapati is a specialist in the scale-up of these processes, possessing critical technical knowledge in microbial cultivation, and process optimization for various environmental applications. She leverages advanced data science tools like Python to ensure the successful translation of lab-scale results into commercially viable industrial operations, such as heap leaching. Her commitment to technological innovation is underscored by her ground breaking patent application on bioleaching, aiming to commercialize a novel approach for metal resource recovery.