

Azolla pinnata: potential phytoremediation, antimicrobial and antioxidant applications †

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Abstract: *Azolla* is an aquatic nitrogen-fixing pteridophyte with a wide distribution in temperate and tropical freshwater ecosystems and paddy fields. Its feasibility as a source for the development of health supplements was tested by analyzing the phytochemical, antimicrobial, and antioxidant properties of the fern. The plant was found to be rich in phenolic compounds like tannins, saponins, etc. which shows it will be of good medicinal value. The DPPH antioxidant activity of the various extracts shows the good presence of antioxidants, which shows its potential use as health supplements. A fair antibacterial activity was shown against the disease, causing bacteria *Staphylococcus* sp. and *Bacillus* sp. It can be concluded that the fern has good nutritional and antibacterial activity. The phytoremediation property of *Azolla* grown in a metal-containing sample was assessed using atomic absorption spectroscopy, and positive results indicated its prospective use in industrial or laboratory wastewater treatment. Thus *Azolla* is an ideal candidate for future research in food, feed, and fodder applications. It can be utilized as a natural plant-based antimicrobial and also as a water purifier.

Keywords: *Azolla*; antioxidants; *Staphylococcus* sp.; wastewater treatment; phytoremediation property; water purifier.

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Conflicts of Interest

The authors declare no conflict of interest.