Assessment of antimycotic potential of medicinal mushrooms against two agricultural soil born disease causing Fungal Pathogens - A sustainable agriculture

Tanveer Hussain*, Muhammad Ishtiaq, Momna Shahzadi

[1]*Department of Botany, Mirpur University of Science and Technology (MUST), Mirpur-10250 (AJK), Pakistan*
*tanveer.botany@must.edu.pk

The present research work explored antifungal potential of medicinal mushrooms against two notorious soil borne pathogens present in crop fields of sub-division Samahni District Bhimber, Azad Jammu and Kashmir (AJK). Four mushrooms were selected for antifungal activity to minimize the disease severity of two soil borne pathogens. Agar Well Diffusion Method (AWDM) was used for these in-vitro antifungal (IvA) activities. Our findings indicated that methanolic extract of *Schizophyllum commune*, *Trametes hirsuta*, *Ganoderma lucidum* and *Ganoderma tsugae* had better antifungal potential than that of diethyl ether, chloroform, and distilled water extracts against two crop damaging pathogens (*Fusarium oxysporum* and *Rhizoctonia solani*). It was also documented that methanolic extract of *Schizophyllum commune* against *Fusarium oxysporum* showed maximum zone of inhibition (ZI) which is 9.67±0.60 and *Rhizoctonia solani* also indicated highest ZI (5.67±0.88). Similarly, greater ZI (1.83±0.33) of *Trametes hirsuta* extract appeared in methanolic extract against *Fusarium oxysporum*. *Ganoderma lucidum* metabolic extract also indicated very effective results with ZI 7.83±0.44 and 8.83±0.60 against *Fusarium oxysporum* and *Rhizoctonia solani* respectively. Fourth selected medicinal *Ganoderma tsugae* macrofungi also showed maximum ZI against *Fusarium oxysporum* (2.50±0.28) and *Rhizoctonia solani* (6.50±0.28). Finally, it was concluded that the extracts of *Schizophyllum commune* mushroom greatly reduced the growth rate of soil borne micro-pathogens as compared to other tested species. The eradication of soil borne fungal species through medicinal mushrooms application will improve the growth of crops and ultimately increase the yield of crops as a sustainable agriculture.

Keywords: Antifungal Potential; Medicinal mushrooms; Fungal Pathogens**;** Agar Well Diffusion Method; Sustainable Agriculture