

# Cultivation and bioactivities of three selected mushrooms against four dominant seed borne fungal diseases on wheat crop growing in district Bhimber, AJK

Hussain T

Mirpur University of Science and Technology (MUST), Pakistan

✉ Hussain@gmail.com

## Abstract

**Statement of the Problem:** The current research work was explored the cultivation of three edible mushrooms (*Agaricus bisporus*, *Pleurotus ostreatus* and *Coprinus comatus*). These mushrooms were used as food effectively due to high proteinaceous impacts on life. The bioactivities of these three mushrooms were also documented against four dominant diseases of wheat crop improvement. **Methodology and Theoretical Orientation:** For the cultivation of *Pleurotus ostreatus*, five different types of composts (mixture of wheat straw and chicken manure, wheat straw, mixture of wheat straw and paper waste, sterile *Dalbergia sisoo* leaves and sterile *Morus alba* leaves) were used. The mushroom *Coprinus comatus* was cultivated on four types of compost (sterile *Dalbergia sisoo* leaves, mixture of wheat straw and chicken manure, wheat straw, sterile leaves of *Morus alba*). The compost for the cultivation of Button mushroom (*Agaricus bisporus*) was prepared by mixture of wheat straw with Ammonium nitrate, Gypsum, Wheat bran and Urea. Agar Well Diffusion Method (AWDM) was used for invitro bioactivities of selected mushrooms. **Findings:** Highest yield (11.9 kg) was obtained on compost of wheat straw and chickenmanure. Highest yield (8.42 kg) was obtained on compost of *Dalbergia sisoo* leaves. The highest yield of Button mushroom (4.65 kg) was obtained. The bio-activity of these mushrooms were assessed against four fungal pathogens (*Tilletia indica*, *Fusarium graminearum*, *Ustilago tritici*, *Bipolaris sarkoniana*) that were isolated from the wheat samples of different areas of District Bhimber. These findings indicated that highest antifungal activity was shown by methanolic extract of *Pleurotus ostreatus* against *Tilletia indica* with zone of inhibition (ZI) 16.2 mm and the lowest bioactivity was shown by distilled water extract of *Agaricus bisporus* against *Tilletia indica* pathogen with ZI 7.77 mm. The highest bio-activity against *Fusarium graminearum* was also measured by methanolic extract of *Pleurotus ostreatus* with ZI 14.63 mm and the lowest bioactivity was shown by distilled water extract of *Coprinus comatus* with ZI 8.4 mm. The highest bio-activity against *Ustilago tritici* was shown by methanolic extract of *Agaricus bisporus* with ZI 18.12 mm while the lowest bioactivity was calculated against distilled water extract of *Agaricus bisporus* with ZI 8.67 mm. The highest bio-activity was also quantified by methanolic extract of *Coprinus comatus* against *Bipolaris sarkoniana* with ZI 17.07 mm while lowest bio- activity was indicated in distilled water extracts of *Coprinus comatus* against *Bipolaris sarkoniana* with ZI 9.33 mm. **Conclusion & Significance:** It was concluded that edible mushrooms have been cultivated successfully in study area as a good source of food as well as cultivated for medicinal purpose to control plant diseases.

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## Biography

Tanveer Hussain is working as Assistant Professor in Department of Botany, Mirpur University of Science and Technology (MUST), Mirpur (AJK), Pakistan. He is mycologist and plant pathologists. He has published 53 research papers in international reputed journals

Muhammad Ishtiaq is working as Associate professor as well as Director AS&RB. Mehwish Maqbool is working as lecturer in Department of Botany, Mirpur University of Science and Technology (MUST), Mirpur (AJK), Pakistan. She has published 47 research papers in international reputed journals. Muhammad Fezan Arshad recently completed MPhil in Botany. He has published 2 research papers..