

Thematic Area 3: Biology and Biotechnology

Antimicrobial Activity of Mushroom (*Agaricus Bisporus*) and Fungi (*Trametes Gibbosa*) Extracts from Mushrooms and Fungi of Egerton Main Campus, Njoro Kenya

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Abstract

The emergence of drug resistance has caught the attention of scientist due to the risk of going back to the pre-antimicrobial era. This study was carried out to investigate the antimicrobial properties of mushroom (*Agaricus bisporus*) and fungal (*Trametes gibbosa*) metabolites. The study involved isolating *Erwinia spp* and *Ralstonia solanacearum* from infected plants followed by subjecting the isolates and commercially acquired *Staphylococcus aureus* (ATCC 25923), *Enterococcus faecalis* (ATCC 29212), *Escherichia coli* (ATCC 25922), *Pseudomonas aeruginosa* (ATCC 27853), *Streptococcus pneumoniae* (ATCC 49617), *Proteus vulgaris* (ATCC 49990), *Candida albicans*, *Aspergillus niger* (ATCC 1015), *Fusarium oxysporum* (ATCC 16608), *Ustilago maydis* (ATCC 14826), *Microsporium gypseum* (ATCC 15621) and *Malassezia furfur* (ATCC 14423) to antagonism by mushroom and fungal isolates. The study revealed that mushroom and fungi metabolites inhibit growth of the tested pathogens. However, fungi metabolites did not inhibit growth of Gram positive bacteria. In addition, there was no significant difference in inhibition of the bacterial growth by mushroom extracts ($P=0.09$). However, there was significant growth inhibition of the bacteria by fungal extracts ($P=0.00001$). In addition, was no significant difference in bacterial growth inhibition between mushroom and fungal extracts ($P=0.089$). On antagonism of pathogenic fungi, there was no significant difference in growth inhibition of the fungi by mushroom extracts ($P=0.24$). Contrastingly, there was significant difference in growth inhibition of the fungal pathogens by the fungal extracts ($P=0.025$) and also in the inhibition of the fungal pathogens by mushroom and fungal extracts ($P=0.0022$). Mushrooms and fungi produce antimicrobial metabolites that can be exploited in treating diseases that affect man and his plants and animals. This study established that the extracted antifungal metabolites did not inhibit growth in gram positive bacteria. There is need to carry further study to establish the chemical composition of the antimicrobials.

Key words: Antimicrobial activity, fungi, mushrooms