Debasmita Chatterjee et al., Nat Prod Chem Res 2015, 3:6
http://dx.doi.org/10.4172/2329-6836.C1.008

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3rd International Conference and Exhibition on
Pharmacognosy, Phytochemistry & Natural Products
October 26-28, 2015 Hyderabad, India

Role of secondary metabolites of few edible mushrooms for the antimicrobial potency against extended spectrum beta-lactamase producing microorganisms

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Extended spectrum beta-lactamase (ESBL) is a rising threat to clinical practitioners as they face a great difficulty in treatment of infected patients as these superbugs are resistant to broad spectrum cephalosporin and monobactam antibiotics. Most ESBL producing strains are *Klebsiella pneumoniae, K. oxytoca, Escherichia coli* and they cause severe infection of urinary tract, blood and lungs. Immunocompromised people, diabetic patients undergoing long prescribed antibiotic treatment, elderly patients and persons who use urinary catheter are usually infected with ESBL producing strains. In this study, we have evaluated *in vitro* antimicrobial activities of four edible mushrooms namely *Pleurotus florida, Pleurotus eous, Pleurotus ostreatus, and Calocybe indica* against two ESBL positive K. pneumonia and one *E. coli* isolated from urine samples of diabetic patients. Methodologies adopted to study antibacterial activity were disc diffusion and minimum inhibitory concentration (MIC) assay. Phytochemical screening assay (PSA) and estimation of the content of essential secondary metabolites were also done to correlate the antimicrobial activities with their content. The results showed excellent antimicrobial activities of the above mentioned four edible mushrooms against the ESBL producing strains. The phytochemical screening assay revealed the presence of essential secondary metabolites such as phenol, flavonoid, terpenoid, steroid and saponin. The estimation of the phenol and flavonoid content among the three mushrooms showed significant difference having P value <0.0006 using One way ANOVA. Thus the present study showed promising activity of the bioactive components of these edible mushrooms against the ESBL producing microorganisms.

Biography

Debasmita Chatterjee is presently working on antimicrobial activities of mushrooms after receiving her Master degree in Microbiology from West Bengal University of Technology, Kolkata. She has published two papers in peer reviewed journals and presented nine papers in international and national conferences so far. She was awarded DST INSPIRE Fellowship from Government of India for pursuing her PhD degree and also received Best Oral Presentation Award in West Bengal Science Congress and Technology, 2015 held in North Bengal University. Besides research work she is also interested in Paintings.

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