

# Isolation and Characterization of Antimicrobial Peptides from *Datura Innoxia* Leaves Showing Activity against Selected Microorganisms

Samriti<sup>1</sup>, Rajesh Biswas<sup>2</sup> and Kakoli Biswas<sup>1\*</sup>

<sup>1</sup>Department of Biotechnology, DAV College, Sector- 10, Chandigarh

<sup>2</sup>Department of Zoology, Government Home Science College, Sector- 10, Chandigarh

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**Abstract**—The rapid emergence of multidrug resistant infections has presented a serious challenge to antimicrobial therapies and major health threat over the past decades. Antimicrobial peptides (AMPs) are the crucial factors, which plays an important role in host defence mechanisms. AMPs are ubiquitous and found in diverse organisms ranging from microorganisms to animals. AMPs have been described as an evolutionary ancient weapons against microbial infection. Plants are the precious source of natural antimicrobial molecules including antimicrobial peptides known as plant antimicrobial peptides (PAMPs). PAMPs exert multiple antimicrobial activities, which includes membrane permeabilization and interference with DNA, RNA and protein synthesis that might provide a suitable approach to prevent bacteria from developing resistance. The present research work was aimed at isolation and characterization of antimicrobial proteins from *Datura innoxia* leaf extract. Leaf extract of *Datura innoxia* showed antimicrobial activity against *Staphylococcus aureus* and *Bacillus subtilis* whereas no activity was observed against *Escherichia coli* and *Candida albicans*. Antimicrobial activity was determined using well diffusion method. The molecular weight of antimicrobial protein was confirmed by Tricine SDS-PAGE electrophoresis. In Tricine SDS-PAGE electrophoresis, seven bands, six bands and eight bands were observed in dialysed samples of 90% protein pellet, 75% protein pellet and 50% protein pellet of *Datura innoxia* leaf extract respectively. In this report, three peptide bands lower than 20kDa were observed in all the above-mentioned protein pellet of *Datura innoxia* leaf extract that showed antimicrobial activity. Therefore, these three protein bands are putative AMPs which can be used or modified to cure human diseases caused by bacteria.