

## ANTIMICROBIAL AND SELECTED BIOCHEMICAL PROPERTIES OF MUCUS OF SRI LANKAN ENDEMIC SNAIL *Acavus haemastoma*

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Developing novel antimicrobial treatments is crucial to combat the growing threat of antibiotic resistance. The mucus of the endemic snail, *Acavus haemastoma*, used in traditional medicine, could be a promising source of antimicrobial agents. This study investigated the antimicrobial properties of the mucus of *A. haemastoma*, compared the differences in antimicrobial activity between snails inhabiting two distinct habitats, and analysed the selected biochemical properties of the mucus. Mucus samples were collected from snails in two different habitats in Kottawa, Sri Lanka: the Kombala-Kottawa Forest Reserve (KKFR) and the adjacent home gardens. The antimicrobial activity of the mucus was tested against Methicillin-resistant *Staphylococcus aureus* (MRSA), *Escherichia coli*, *Pseudomonas aeruginosa* and *Candida albicans*, using the broth dilution method. Percentage inhibitions were also calculated, and several (2 – 4) mucus samples were randomly chosen from each habitat type for the biochemical analysis, including the determination of total carbohydrate content, total protein content, total phenol content, total antioxidant capacity, elemental composition, and protein profile. A significant difference was observed in the microbial growth between the mucus-treated and distilled-water-treated samples ( $W = 9$ ,  $p = 0.0081$ ) against *C. albicans* indicating the presence of anti-candidal activity. However, the results of percentage inhibitions between the two habitats tested for each microbial culture indicated that habitat had no effect on antimicrobial activity. Biochemical analyses revealed that the mucus from the natural forest had a higher carbohydrate content (705.5 mg L<sup>-1</sup>) than that from the home gardens (224.1 mg L<sup>-1</sup>). No substantial differences in mucus phenol concentration or antioxidant capacity were observed between the two habitats. Proteins were present at relatively higher concentrations compared to other biochemical components, suggesting that those ranging from 9.44 kDa to 270.77 kDa may be responsible for the anti-candidal activity in *A. haemastoma*. These findings suggest that the mucus of *A. haemastoma* be a promising source of an animal-derived antimicrobial agent.

**Keywords:** Antibiotic resistance, Antioxidant capacity, Elemental composition, Protein profile