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Exploring the potential of bioactive peptides from *Lamellidens marginalis* for nutraceutical therapy

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Statement of the Problem: World Health Organization attributes hypertension as the leading cause of cardiovascular mortality. Reports suggest that nearly 26% of the adult populations have hypertension worldwide. Dietary changes and life-style modifications are essential to plan preventive strategies and promote the health of these populations. Dietary proteins have long been recognized for their nutritional and functional properties. They are good sources of bioactive peptides with broad spectrum of pharmacological activities. Currently, bioactive peptides from fish and vegetable proteins are gaining importance for their anti-hypertensive and anti-inflammatory properties. Molluscs, as a group are regarded as under-exploited source of health-benefit molecules and have good prospects. The freshwater edible mussel *Lamellidens marginalis* is considered as an unconventional cheap protein source.

Objective: Evaluation of the potential of bioactive peptides from *Lamellidens marginalis* against hypertension and oxidative stress.

Methodology: Proximate analyses for nutritive value were done. Protein hydrolysates were prepared using commercially available protease - Alcalase 2.4L. Degree of hydrolysis (DH %) was calculated. ≤ 3 kDa peptides of alcalase hydrolysates (AlcH120) were prepared by ultra-filtration for further study. Anti-oxidative activity was studied with hydroxyl radical and DPPH radical scavenging activities. Angiotensin Converting Enzyme [ACE] inhibitory activity was performed to determine anti-hypertensive activity. MALDI-TOF was performed to determine the amino acid sequence of the ultra-filtrate of AlcH120.

Findings: Mussel meat contains moderate amount of protein and carbohydrate but less amount of fat. Mussel protein hydrolyzed by Alcalase 2.4L at 120-minute gives maximum peptide bond cleavage. Progressive antioxidant activity has been demonstrated with 10mg/ml protein concentration (AlcH120). A novel ACE inhibitory peptide of anti-hypertensive nature has been identified.

Conclusion & Significance: Present investigation has demonstrated that bioactive peptides derived from *Lamellidens marginalis* can be used for nutraceutical therapy. However, the observations are preliminary and therefore should be viewed as a prelude to what future holds.