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In vitro hypotensive effect of chitosan extracted from exoskeleton of freshwater crab *Sartoriana spinigera*

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Statement of the Problem: Cardiovascular diseases have emerged as global pandemic affecting 26 million people worldwide and responsible for the highest number of deaths annually. The two most important factors that lead to heart failures are hypertension and hypercholesterolemia. Overall, 26.4 % of the world's adult population had hypertension in 2000 and the percentage is predicted to increase by about 60% i.e. to 29.2% of the total adult population by the year 2025. Purpose of the Study is to estimate the effect of Chitosan, a natural biopolymer which is regarded as safe, non-toxic, biocompatible, and biodegradable with good absorption properties and thus is known to have various applications in pharmaceuticals and food industry. On the other hand, synthetic drugs show many side effects in patients such as asthma attacks, swelling, aching muscles and fever. Chitosan is a linear polysaccharide poly-β-(1->4) - glucosamine obtained from exoskeleton of edible crab *Sartoriana spinigera.*

Methodology and Theoretical orientation: Extraction of Chitosan is done by the process of demineralization and deproteinization of exoskeleton of crab to obtain chitin. Deacetylation of chitin is done in which acetyl groups are removed from chitin to obtain chitosan. The In vitro ACE assay was done using 1nM Hippuryl-His-Leu as substrate. Kidney cortex plasma membranes were used as ACE enzyme source. Enzyme hydrolyses the substrate into hippurate. Pyridine and Benzene Sulphonyl Chloride were used as chromogenic agents. The yellow color formed was measured at 410nm in an ELISA Plate Reader. Captopril was used as a standard compound.

Findings: It was observed that chitosan sample 10µg/ml, 50µg/ml and 100µg/ml showed 73.35±10.2%, 84.99±15.4% and 99.7±12.8% ACE in vitro inhibitory activity respectively. Captopril,2.5 nM assayed as a standard compound showed 85.37±16.7% ACE inhibitory activity.

Conclusion and Significance: Present study indicated that Chitosan (50µg/ml and 100µg/ml) showed strong ACE in-vitro inhibitory activity. Chitosan having ACE inhibitory activity may be used as an antidote to hypertension and could find application in biomedical devices and drug delivery.

Biography

Suhasini Besra is an Associate Professor in the University Dept. of Zoology, Ranchi University, India. With an extensive teaching experience of more than 35 years, she has published more than 30 research papers in International and National journals. She has attended various International/ National conferences and presented papers in the same. She has successfully supervised 6 students for the award of PhD degree and 6 students for the award of MPhil degree. She is currently supervising 6 PhD research scholars and counts this as her greatest achievements she is also accredited with publishing books and many chapters in books. She has been actively contributing in the field of fish bioenergetics, shellfish biochemistry, histology, histochemistry and study of biopolymers for more than 30 years.

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