

# TOXICOLOGY AND APPLIED PHARMACOLOGY

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## Effect of Paraoxon on cardiotoxic activity of parotoid gland secretion of *Bufo melanostictus* (Schneider) on isolated heart of frog

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**Introduction:** Amphibians are treated as bio-indicators of aquatic and terrestrial ecosystems by means of their sensitivity towards environmental changes and are the most threatened and rapidly declining vertebrate groups disappearing from different habitats on a global scale. This decline is mainly because of extensive use of agrochemicals especially the pesticides. Amphibian skin is morphologically, biochemically and physiologically a complex organ possessing a wide range of functions necessary for their survival.

**Statement of the Problem:** In view of the importance of bioactive compounds present in the secretions of parotoid glands to pharmacology, the present investigation was carried out to study the cardiotoxic activity of parotoid gland secretion of common Indian Toad *Bufo melanostictus* on isolated perfused frog heart (*Rana tigrina*).

**Methodology:** Cardiotoxic activity of parotoid gland secretion of *B. melanostictus* in normal as well as when induced with Paraoxon, an organophosphorous compound, was studied. For the evaluation of cardiotoxic activity, Syme's technique is being employed; Digoxin and Propranolol were used as standard drug and  $\beta$ -blocker respectively to characterize the effects on the receptors.

**Findings:** Both isolated perfused heart as well as hypodynamic heart of frog showed dose dependent positive iono-trophic effects. The parotoid gland secretion exhibited cardiac stimulant activities. The Propranolol was not able to block the effects of Paraoxon induction on toad secretion.

**Conclusion & Significance:** Thus, the present investigation reports that the parotoid gland secretion increased the force of contraction, heart beat and cardiac output in perfused frog's heart, whereas, there was no change on hypodynamic heart, indicating that there may be existence of two components, one with  $\beta$ -receptor stimulating activity and other acting directly on the heart (independent of  $\beta$ 1-adrenoreceptors). Further studies may lead to the development of a new cardiotoxic drug development that may help in curing cardiac ailments.

### Biography

Yanamala Venkaiah has obtained his MSc and PhD in Zoology in 1995 and 1999, respectively from Kakatiya University, India. Presently, he is working as an Assistant Professor in the Department of Zoology, Kakatiya University, India. He has 15 years of teaching and 16 years of research experience. His research interests include pharmacological effects on experimental animals. He is focusing on integument secretions and their derivatives of lower vertebrates like fishes and amphibians and also to study their biochemical analysis through various techniques. He has published more than 50 research papers and authored 5 text books. He is also an Editorial Board Member for various research journals. He got Distinguished Scientist Award in 2016, Dr. APJ Abdul Kalam Award for teaching excellence in 2015 and UGC Research Award, India in 2012.

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