

# Environmental Toxicology and Pharmacology

February 21-22, 2019 | Paris, France



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### Deltamethrin induced changes in endocrine glands regulating calcium and ionic balance in *Heteropneustes fossilis*

The impact of deltamethrin on the freshwater fish *Heteropneustes fossilis* exposed to two sub lethal concentrations (0.09 mg/L and 0.18 mg/L) for 30 days on the activities of endocrine glands viz. prolactin gland, corpuscles of stannous and ultimobranchial gland. Changes in the structure of endocrine gland lead significant variation in inorganic ions concentration  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$  in brain, kidney, gills and intestine of *H. fossilis*.  $\text{Ca}^{2+}/\text{Mg}^{2+}$  ATPase activities significantly decreased in all vital tissues viz., brain, gills, intestine and kidney at both the exposure for 30 days in *H. fossilis*. The ultimobranchial gland exhibited mild histological changes at lower concentration of deltamethrin. At higher concentration decrease in staining response of the cytoplasm, decrease in nuclear volume and degeneration in the cells were noticed. In corpuscle of stannous sever changes observed with increase in granulation, vacuolation and degeneration of cell membrane noticed at higher concentration of deltamethrin. In prolactin cells sever

changes observed at both the concentration for 30 days exposure. Significant changes observed in ionic balance in vital tissues brain > gill > intestine > kidney of the fish exposed to higher concentration of deltamethrin. Significant changes noticed in the vital organs viz. Ionic levels in brain, gills, kidney and intestine. During exposure of deltamethrin endocrine glands, brain and intestine found to be most affected tissues of the fish.

#### Speaker Biography

Prem Singh Bugasara is working as an associate professor, department of Zoology, Shri Baldev Ram Mirdha Government College, Nagaur, Rajasthan. He has been associated with profession for 16 years. He was awarded Ph.D degree from Maharaja Ganga Singh University, Bikaner for research work on blackbucks. He is passionately engaged in biodiversity conservation and has conducted several seminars and awareness programs to encourage people to protect native flora and fauna. He always tries to improve society and youth by discussing various social issues. He has completed a research project on Wildlife conservation and assessment of biodiversity in Rotu Conservation Reserve, Nagaur (Rajasthan) in year 2016-17 and is continuing with another wildlife research project. He has published research papers on various topics in national and international journal.

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