

RESEARCH PAPER:

## Effect of temperature on protein content in freshwater fish, *Channa punctatus* from Godavari river, Nanded

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### SUMMARY

Fish have long been considered as excellent indicator of water quality. Each type of fish has its own fatal temperature, the temperature at which it will suffer heat death. Rapid temperature changes produce thermal shock or stress. In the present study, the snake headed fish, *Channa punctatus* was exposed to different temperature treatments *i.e.* 20, 25, 28, 30 and 32° C. The changes in protein content in fishes were observed on 24, 48, 78 and 96 hrs of continuous exposure. At higher temperature of exposure, *Channa punctatus* showed decreased in protein content in the muscle.

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### Key Words :

Thermal effect,  
*Channa punctatus*,  
Protein content

Environmental stress causes a variety of detectable and recognizable physiological changes in fishes. The physiological changes including the changes at cellular level in several fish species under different experimental and natural conditions were reported (Place, *et al.* 2005; Atkins *et al.*, 2008; Franklins *et al.*, 2007; Ream *et al.*, 2003; Verma *et al.*, 1992).

Protein is one of the most important biochemical constituents and chemical complex which acts as energy yield of the fish with their constituent amino acid and are building blocks of the cell. Knowing the importance of fish as a nutrient, it is essential to know its nutritive value and variation. The fresh water fishes in India provide a food to mankind. The nutritive and medicinal value of fish has been recognized from immemorial time. Fishmeal is still a preferred protein source for fish diets corresponding to its high protein quality (NRC, 1993). Freshwater fish flesh provides an excellent source of protein for human diet. The protein is of high digestibility, biological and growth promoting value for human consumption. They are important biomolecules involved in a wide spectrum of cellular function. They interplay between enzymatic and non-enzymatic proteins to govern the metabolic harmony (Lehinger, 1984). Number of scientists

have done work on the effect of temperature on the biochemical content in freshwater fishes (Basha, 1984, Basha *et al.*, 2005). Fish can be subjected to great and sometimes rapid changes in ambient temperature which directly affect the protein content in freshwater fishes. With this background, an attempt has been made in this study on the tissue protein content in freshwater fish, *Channa punctatus* subjected to temperature stress.

### EXPERIMENTAL METHODOLOGY

*Channa punctatus*, snakeheaded freshwater fish of family Channidae, order Perciformes locally called Dhoke (Jayaram, *et al.*, 1982). was chosen as an experimental animal. The fish of an average length of  $21.81 \pm 1.98$  cm and a mean weight body weight of  $40.73 \pm 2.03$ g were collected from the Godavari river, Nanded (Maharashtra). These fishes were transported in oxygenated polyethylene bags to the laboratory. The fish were regularly fed with chopped earthworms and small pieces of goat muscles. The food found unused by fish was cleared periodically from the culture tank. The tank was cleaned periodically to avoid infection of fish and sprayed with 1 per cent potassium permagnate to eliminate any bacterial or fungal infection.

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