

EFFECT OF CALCIUM CARBIDE ON BIOCHEMICAL PROPERTIES OF ROSY BARB, *PETHIA CONCHONIUS* (HAMILTON, 1822)

Sana K.M. Patel*, S. T. Indulkar, Abdul Lateef A. H. Shaikh, M.S. Sawant, A. S. Pawase and R. K. Pai

College of Fisheries, (Dr. Balasaheb Sawant Konkan Agriculture University), Ratnagiri - 415 629, India.

*e-mail : sanapatelfish@gmail.com

(Received 10 October 2018, Accepted 8 February 2019)

ABSTRACT : The effect of sublethal toxicity of an agro-chemical calcium carbide on carcass composition of freshwater fish rosy barb (*Pethia conchoni*) was estimated. During sublethal exposure for a period of 28 days two concentrations were selected i.e., $1/10^{\text{th}}$ (5.75 mg l^{-1}) and $1/5^{\text{th}}$ (11.51 mg l^{-1}) of LC_{50} (57.5 mg l^{-1}). Elements like, crude protein, crude fat, carbohydrate and ash were estimated throughout the exposure period at the interval of seven days. Crude protein significantly decreased ($P < 0.05$) from 58.58 ± 0.02 to 54.08 ± 0.01 on 28th day, crude fat decreased from 9.55 ± 0.01 to 8.11 ± 0.01 on 28th day of the study whereas, carbohydrate significantly increased from 9.89 ± 0.01 to 11.86 ± 0.01 on 28th day and ash content also significantly increased from 10.86 ± 0.01 to 13.01 ± 0.01 on 28th day. All the estimated parameters showed of carcass of rosy barb significant alteration due to exposure to calcium carbide.

Key words : Carcass composition, biochemical properties, calcium carbide, rosy barb, toxicity.

INTRODUCTION

The use of acute toxicity tests for assessing the potential hazard of agrochemical contaminants to aquatic organisms is well documented (Hatakeyama *et al*, 1994; Liess and Ohe, 2005). For many years, ethylene is being used as a fruit ripening agent. However, now a days, calcium carbide is getting more popular in this regard as it has a faster fruit or vegetables ripening property. However, inappropriate use of carbide to ripen fruits is associated with many health hazards. A very strong reactive chemical, calcium carbide has carcinogenic properties and acetylene generated from carbide was flammable and explosive even in a low concentration as compared to ethylene (Geesner, 1977).

Calcium carbide apart from ripening of fruits and vegetables, it is being used in aquaculture ponds for eradicating the unwanted crabs and other burrowing animals (Singh, 2001). Dumping of spent calcium carbide waste results to death of aquatic organisms (Elliot, 2000). Untreated calcium carbide waste alters the pH of the soil, is toxigenic and can affect ecosystem processes. Treatment of calcium carbide waste by oxidation (aeration) will reduce its effects on soil health and it come to aquatic environment through runoff, which can affect the aquatic environment and organisms (Fattah, 2005).

Cyprinids are commonly bred as aquarium fish, but

also as model fish for scientific research. These include the zebra fish (*Danio rerio*), rosy barb (*Puntius conchoni*), Indian medaka (*Oryzias melastigma*), Gambusia (*Gambusia affinis*), Guppy (*Poecilia reticulata*) etc. (Laan *et al*, 2002; Segner, 2009; CEK and Gokce, 2005). The rosy barb is found in natural conditions in the tropical waters of south-east Asia, including: Afghanistan, Pakistan, Nepal, India and Bangladesh. The popularity of domestic aquarium fish, including the rosy barb, is caused both by its attractive colouring and ease of breeding (CEK *et al*, 2001; CEK and Gokce, 2005; Kupren *et al*, 2008; Prusińska *et al*, 2008). In addition rosy barb proved to have a high sensitivity to agrochemicals and therefore selected as a potential model fish for present study.

MATERIALS AND METHODS

Chemical and test solution

The calcium carbide was obtained for assessing its toxicity study on *Pethia conchoni* from local market. Stock solution was prepared having strength of 1000 ppm by adding known quantity of calcium carbide in 1000 ml distilled water. Calculated amount of stock solution was added to water and mixed thoroughly to arrive at a required level of working concentrations.

Test organisms

Adult rosy barb, *Pethia conchoni* (average body