



# EFFECT OF CALCIUM CARBIDE ON LIPID CONTENT IN THE FRESHWATER CRAB, *BARYTELPHUSA CUNICULARIS*

V. B Lone<sup>1</sup> V. D. Suryawanshi<sup>2</sup> H.S.Jagtap<sup>3</sup>

Department of Zoology

M.S.P. Mandal Shri Shivaji College Parbhani<sup>1-3</sup>

Sant Ramdas Arts, Commerce & Science College Ghansawangi<sup>2</sup>

\*corresponding author [vijay1351976@gmail.com](mailto:vijay1351976@gmail.com)

**Abstract:** The experiment was conducted to study the effects calcium carbide on biochemical content of muscles, hepatopancreas kidney. An attempt has been made in the present investigation to determine the acute toxicity & effects on biochemical content of various tissues. The freshwater crab *Barytelphusa cunicularis* was exposed in different concentration of calcium carbide 0.10%, 0.20% & 30%. The lipid content was significantly decline in all the tissue in all the duration.

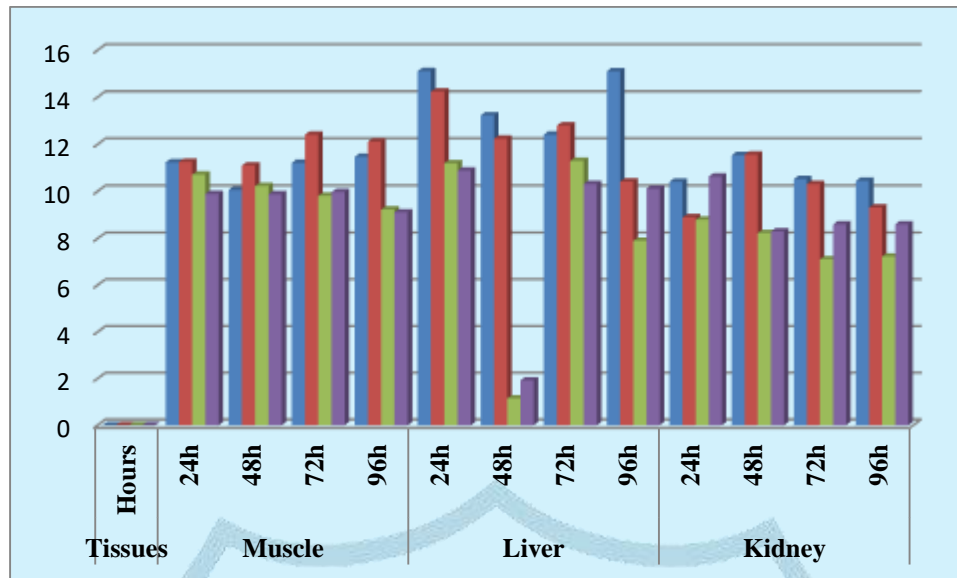
**Key words:** Calcium carbide, lipid, *Barytelphusa cunicularis*

**Introduction:** Use of calcium carbide for fruit ripening has been known for many years, but not enough literature is available on acetylene production from calcium carbide. We warn that the use of artificial ripening agents can be fatal. Excessive consumption of calcium carbide-laced fruits can cause intoxication, as traces of calcium carbide are unfit for human consumption. There are very few cases of adverse effects after exposure to acetylene reported in the medical literature. Hargar and Spolyar,(1958) reported the death of a 16-year-old who died while operating a carbide acetylene generator. Williams and Whittington reported the death of a 40year-old man due to inhalation of industrial acetylene (2001). When the carbide is used on very raw fruit, the amount of the chemical needed to ripen the fruit has to be increased. This makes the fruit even more tasteless, unhealthy, and possibly toxic. Dhembare et.,al., (2011).Calcium carbide used in India is of industrial grade and when acetylene generated from calcium carbide can be harmful for aquatic life. Calcium carbide is a artificially fruit ripening agent which is widely used by fruit sellers. The United States Department of Health (USDH), states that higher exposures may even cause pulmonary edema, and Kjuus et al. (2007), observed that chemicals including CaC<sub>2</sub> and acetylene gas also show other adverse effects including memory loss, neurological system failure, and cerebral edema. Other effects especially from contaminated foods include colonic lung cancer, quick-buck syndrome, DNA, RNA & haematological changes Dhembare, et. al., (2011) as well as proliferation of bacteria, fungi and viruses which can cause diarrhoea, peptic ulcer and other human diseases.

**Material and Methods:- Collection and maintance:** The freshwater crabs *Barytelphusa cunicularis* were collected and acclimatized for four to five days and weighing about 40 to 50 gm. They were divided in to four groups, each containing six animals and kept in 0.1% 0.2% and 0.3% test solution of calcium carbide for various time intervals 24h 48h 72h & 96h. One groups served as control. After exposure sacrifice crab for each successive hour the LC50 value was reached at 96h which are 0.193 ppm and isolate muscle, hepatopancreas, kidney & blood kept in distilled water and stored in refreratory at 4C<sup>0</sup> temperature for biochemical analysis. The lipid was determined by using Ethanol- ether method (Folch *et al.*, 1957). Dissolved oxygen was determined by winkle's methods as modified by Saroja (1959).

**Results and discussion:** in the muscle of 24h when exposed in 0.10% calcium carbide the lipid was significantly P<0.01increased in all the duration. While in liver it was highly significantly P<0.001 decreased. In the kidney initial 24h and 48h it was slightly significantly P>0.001 decreased. While in 72h &

96h it was highly significantly  $P < 0.05$  decreased. When crab was exposed in 0.20% of calcium carbide, the total lipid was significantly  $P < 0.01$  decreased in liver in all the duration. When crab was exposed in 0.30% of calcium carbide, the lipid was significantly  $P < 0.01$  decreased in kidney in all the duration.



**Graph no.1**  
Showing effects of calcium carbide on lipid content in various tissues in different concentration for different time intervals.

The lipids are most important in maintaining the structural and physiological integrity of cellular and subcellular structure. Lipids are important energy resources in crustaceans. In the present studies the lipid content was drastically decreased when concentration increased in all the duration. Similar results were obtained in the studies of Rao and Rao (1979) and reported that the fat content decreased in muscles, hepatopancreas, and kidney with increase in concentration of exposure time. Also in the another studies of Murthy and Devi (1982) reported decreased level of protein, glycogen and lipid in liver, and increased level in brain of *Channa punctatus* treated with endosulfan. Sub lethal concentration of nuvan exhibited marked changes in the values of protein, carbohydrate and lipid reserves in blood, brain, liver, kidney, testis and ovaries of *Channa punctatus* (Ghosh & Chatterjee, 1989). It is fact that the lipids of aquatic organisms serve as a protective reservoir against the toxic effect of pesticides relatively persistent organic chemicals, because they are bio concentrated mainly in the body lipids. Therefore, in organisms with high lipid content, only a relatively small fraction of the hydrophobic chemical can reach target organs.

### References:

- Chace EM (1934):** Health problems connected with the ethylene treatment of fruits. Am J Public Health;24:1152– 6. Documentation of the Threshold Limit Values and Biological Exposure Indices, 6th ed. Cincinnati, OH. American Conference of Governmental Industrial Hygienists Inc., Technical Affairs Office.
- Chandrakala Patil, Ravindra Paul and Malkanna (2008):** Neuroendocrine regulation and pesticidal impact on freshwater crab, *Barytelphusa guerini* (H. Mine Edwardis). J. Environ Biol., 29(6); 887-892.
- Chaykin Sterling (1970):** In Biochemistry Laboratory Techniques (Wiley Eastern Private Limited, New Delhi).
- Dhembare, A.B. Gholap, V. Vandana, (2011):** Bitter Truth About Artificial Ripener. Journal of Experimental Zoology India, 14(1), 187-189.
- Ghosh, T.K. and Chatterjee, S.K. (1989).** Influence of nuvan on the organic reserves of Indian freshwater murrel *Channa punctatus*. J Environ Biol. 10:93-99.
- Hargar RN, Spolyar LW.(1958):** Toxicity of phosphine, with a possible fatality from this poison. AMA Arch Ind Health 18:497–504.
- Harold Varley (1968):** In Practical Clinical Biochemistry, (Interscience Publisher Inc., New Delhi).
- Murthy,a.s. and Devi,A.P. (1982).** The effect of endosulfan and its isomers on tissue protein, glycogen and lipidin the fish, *Channa punctatus* pesticide biochem. and physiol., 17:280-286.