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EFFECT OF CALCIUM CARBIDE ON THE CARBOHYDRATE CONTENT IN THE FRESHWATER CRAB *BARYTELPHUSA CUNICULARIS*

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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 carbohydrate content was significantly decline in all the tissue in all the duration.

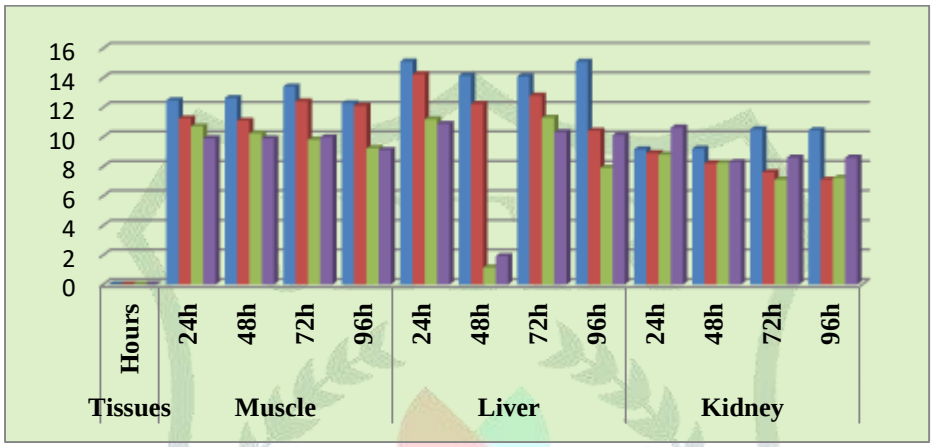
Key words: Calcium carbide, Carbohydrate, *Barytelphusa cunicularis*

Introduction: Use of calcium carbide for fruit ripening has been known for many years, but not enough literature is available on 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 an artificially fruit ripening agent which is widely used by fruit sellers. The adverse potential of calcium carbide as a ripening agent has been established (Bingle *et al.*, 2012).

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 0.193ppm and isolate muscle, hepatopancreas, kidney & blood kept in distilled water and stored in refregeratory at $4C^0$ temperature for biochemical analysis.

The carbohydrate was determined by Anthrone method (Oser, 1965). Dissolved oxygen was determined by winkle's methods as modified by Saroja (1959). The data were statistically analysed by using online software Graph pad prisim and the results ware compare with control.

Results and Discussion: in the muscle of 24h when exposed in 0.10% calcium carbide the carbohydrates was significantly P>0.01decreased 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 carbohydrates was significantly P<0.01 decreased in liver in all the duration. When crab was exposed in 0.30% of calcium carbide, the carbohydrates was significantly P<0.01 decreased in kidney in all the duration.



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

In aquatic environment, crab are usually regarded as organisms of choice for assessing the effects of environmental pollution on aquatic ecosystem, the present investigation the alterations in glucose level content in tissues of *Barytellphusa cunicularis* a fresh water crab exposed to lethal concentrations of calcium carbide. In all the tissues exposed for various concentrations, the glucose was drastically decreased significantly. Similar observation was recorded in other studies. The present finding also supported by other researcher who had noticed that glycogen content of muscle and liver tissues was declined with increasing concentration and duration of industrial effluent exposure (Shaff, 1981; Oikari and Nakari, 1985). The environmental toxicant can induce physiological and biochemical changes in fish that lead to growth inhibition (Beyers *et al*. 1999). The increased glycogenolysis indicated a general disturbance in carbohydrate metabolism, which might have an adverse effect on the life of exposed animals (Dhavale *et al*., 1988). In this present investigation the major function of carbohydrates in the metabolism is as fuel to be oxidized to provide energy for other metabolic processes. In this role carbohydrate is utilized by cell mainly in the form of glucose (Harper *et al*., 1979). Pollutants affect not only the rate of carbon flow in a given metabolic pathway, but also the contribution of different metabolic pathways to the total metabolism of an animal. The deficiency of carbohydrate metabolism has been observed in a variety of physiological disorders and pathological conditions (Harper *et al*., 1979). Glucose is the principal sugar in blood of crabs, serving the tissues as a major metabolic fuel. In general glucose level in the blood of circulating fluid is maintained in an animal through active absorption of glucose. Changes in carbohydrate metabolism are to meet the changing energy demands which can be expected in

animals exposed to stress. The result obtained in the present study clearly indicates that the carbohydrate metabolism is disturbed when crab, *Baryteiiphusa cunicularis* is exposed to Calcium carbide. Hyperglycaemic hormone which increase the degradation of glycogen by the activation of phosphorylase enzymes (Dhavale and Masurekar, 1986). In addition, the hyperglycaemic condition can also be attributed to serve as anaerobic stress on the fish imposed by the metal (Samuel and Sastry, 1989).

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