

## STUDIES ON BIOCHEMICAL COMPOSITION OF MARINE GASTROPOD *PURPURA BUFO* OFF VISAKHAPATNAM COAST

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**Abstract:** Now-a-days research works on nutritional value of molluscan species have gained importance because of their high rate of nutritional substances and used as food in many counties all over the world. But in India, consumption of molluscans as diet is very recent. Hence in this study we made an attempt to examine the biochemical constituents from Visakhapatnam was studied with reference to *Purpura bufo*. In the present study carbohydrate, protein and lipid content in *Purpura bufo* was recorded as  $20.3 \pm 0.87$ ;  $22.45 \pm 1.02\%$  and  $4.56 \pm 0.54$  respectively

**Keywords:** *Purpura bufo*, Biochemical composition and marine gastropod.

**Citation:** Darwin, Ch, Suneetha, K. and Kavitha, K. 2017. Studies on Biochemical Composition of Marine Gastropod *Purpura bufo* off Visakhapatnam Coast. Int. J. Rec. Innov. Acad. Res., 1 (1): 1-6.

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### Introduction

*Purpura bufo*, common name toad purple, benthic marine animal belonging to muricidae family is available in plenty on the rocks and dead corals in the coastal area of Gujarat, Maharashtra and Tamil Nadu. The nacreous shell of the *Purpura bufo* is highly prized for inlay material of jewellery. Before 2001, *Purpura bufo* is called as *Thais bufo*. Later on it was changed, checked and named as *Purpura bufo* (Bouchet, 2015).

Many works were carried out on the composition of amino acid and fatty acid profile on the members of gastropods. Giese (1969) reported molluscan body biochemical composition, Bonnet *et al.*, (1974) and Lombard (1980) studied the biochemical components of *Turbo sarmaticus* (edible gastropod). Ansari *et al.*, (1981) in *Villorita cyprinoids*, Patil and Mane (1982) in *Cellana rota*, Umadevi *et al.*, (1985) in *Morula granulate*, Krishnakumari (1985) in *Cerithium rubus*, Ananda Kumar *et al.*, (1986) in *Hemifusus pugilinus*, Shanmugam

(1987) in *Pythia plicata*, Thivakakaran (1988) in *Littorina quaricentus* and Tagore (1989) in *Thais bufo* and *Thais biserialis*. Usmanghani *et al.*, (1989) reported the composition of fatty acids of the gastropod *Xancus pyrum*. Murugan *et al.*, (1991) studied the biochemical composition of *Rapana rapiformis*, Xavier Ramesh and Ayyakkannu (1992) analyzed the proximate composition of *Chicoreus ramosus*.

Stella (1995) studied the biochemical composition of various parts of edible meat of muricid gastropods. The notable works are as Mobius (1877), Atwater (1892). *Chicoreus virgineus* and *Rapana rapiformis*. Baskara Sanjeevi (2001) studied the proximate composition of *Lambis lambis*. Ajaya Baskar (2002) reported the nutritional evaluation of molluscan seafood. Katherine *et al.*, (2004) investigated the physiology and lipid metabolism of *Littorina saxatilis*. Works on enzyme studies of gastropods are very few. Vorbrodts (1959) studied on enzymes in gastropods.

## Material and Methods

### Study area-Description

It is one of the largest cities in the Andhra Pradesh state which is located roughly 370 kilometres northeast of Guntur (Capital

region). After Chennai and Kolkata on the east coast of India, it is a one of the big port city in the southeast coast of Bay of Bengal and often called as “The Jewel of the East Coast” as well as the “City of Destiny”.

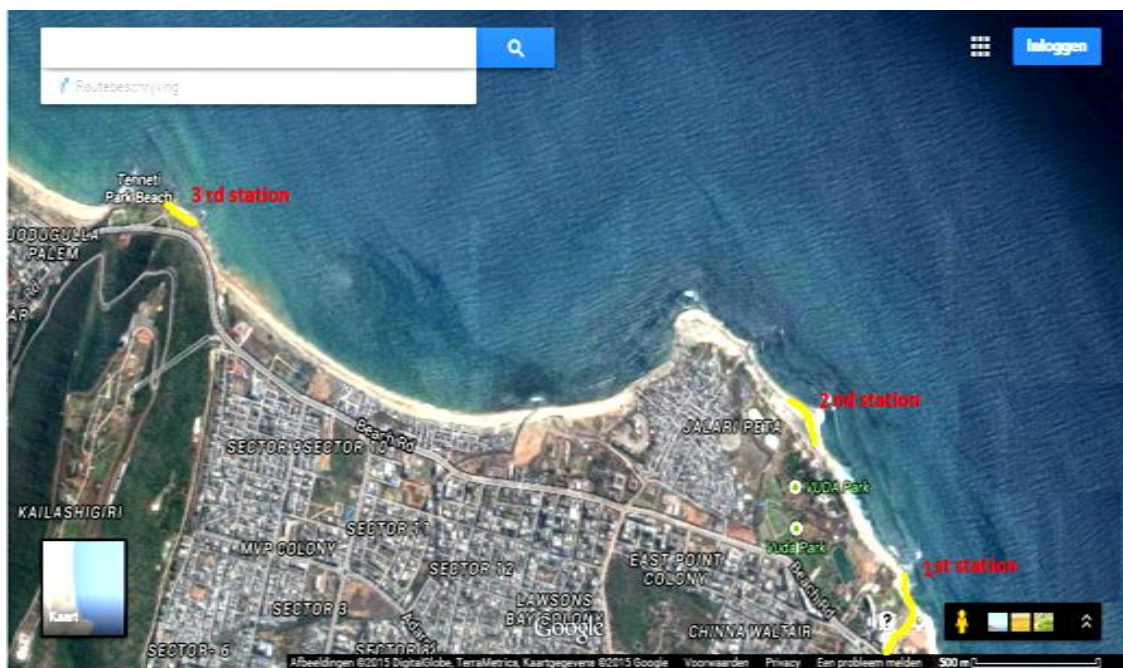


Figure 1. Map showing study area

### Sample collection

Live specimens of gastropod (*Purpura bufo*) were collected from the three stations namely YMC, Vuda park, Thenneti Park of Visakhapatnam (17°41'18"N 83°13'07" E) during low tide. They brought to the TRIMS Institute laboratory (Visakhapatnam) and

cleaned with distilled water. For the experimentation work the collected shells were broken using a hammer, and the soft tissues were collected in petridish which are removed and dried in hot air oven at 50°C. The dried samples were subjected to biochemical estimations.



Figure 2. Dorsal side

Figure 3. Ventral side

### Estimation of Biochemical components

The biochemical components in the gastropod (*Purpura bufo*) was studied by adopting the standard procedures which were mentioned

in Raymont *et al.*, (1964); Duboid *et al.*, (1956) and Folch *et al.*, (1956) for the protein, carbohydrate and lipid respectively.



Figure 4. Sample collection

### Results and discussion

#### Biochemical analysis

The total sugar content of *Purpura bufo* was expressed as  $20.3 \pm 0.87\%$ . In the similar way total protein content was reported to be

$22.45 \pm 1.02\%$  and total lipid content of the *Purpura bufo* was observed to be  $4.56 \pm 0.54\%$ . The Results were shown in Figure 5.

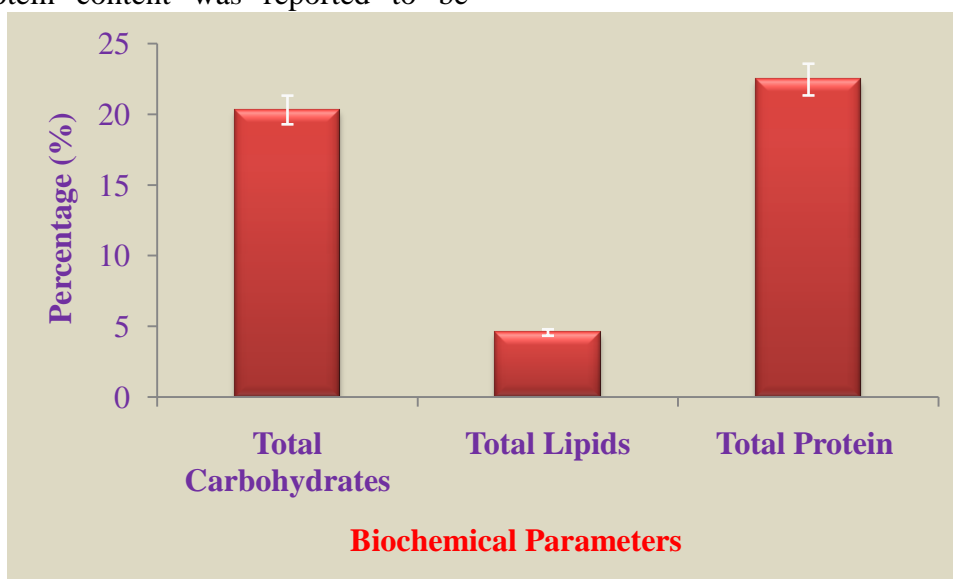


Figure 5. Biochemical composition of *Purpura bufo*.

Nagabhusanam and Mane (1978) revealed that, the proper understanding of nutritional values of any organism is key factor as it

reflects on biochemical contents of the species. The proximate estimations were carried out by Giese (1969) of the molluscan



body parts, Bonnet *et al.*, (1974) and Lombard (1980) in edible gastropod *Turbo sarmaticus*, Ansari *et al.*, (1981) in *Villorita cyprinoids*, Patil and Mane (1982) in *Cellana rota*, Umadevi (1985) in *Morula granulate*, Krishnakumari (1985) in *Cerithium rubus*, Ananda Kumar *et al.*, (1986) in *Hemifusus pugilinus*, Shanmugam (1987) in *Pythia plicata*, Thivakakaran (1988) in *Littorina quaricentus* and Tagore (1989) in *Purpura bufo* and *Thais biserialis*.

During the present analyses the carbohydrate level was  $20.3 \pm 0.87\%$ . According to Ansari *et al.*, (1981) glycogen is the main component in the carbohydrates of molluscs and changes in the carbohydrate level may be attributed due to the accumulation of glycogen at different stages like gametogenesis and spawning.

In the present observation the carbohydrate content was similar to the observations of Sini Margret and Jansi, (2013) with 19.34% in *Thais bufo*. Baskara, (2001) reported the maximum carbohydrate content in foot (18.82%) of *Turbo brunneus*.

In the current observation the protein content of *Purpura bufo* was observed to be  $22.45 \pm 1.02\%$ . This is almost similar when compared to the report of Sini Margret and Jansi, (2013) with 22.34% in *Thais bufo* and Babu *et al.*, (2010) in *B. spinosa* where the protein content of the body tissue was 24.18%. Protein contents of *Purpura bufo* are presented in the (Figure 5). Nirmal (1995) recorded the protein content in *Babylonia zeylanica* male was ranged from 42.18%-68.31% and female was 43.15%-69.75%. Baskara (2001) observed the protein content in male and female *Lambis lambis* and the percentage composition was 47.5-69.13% and 46.75-70.88% respectively.

Giese (1969) stated that when animal in stress, the lipid acts a reserve material for the further utilization. Whereas Ansari *et al.*, (1981) reported that throughout the seasonal

cycle the lipid involvement is little. Nirmal (1995) recorded the lipid values and their variations in the gastropod *B. zeylanica*. In male *B. zeylanica* lipid content varied from 3.21% to 9.20% in case of females as 3.33 to 10.38%. Babu *et al.*, (2010) reported the lipid content of *Bursa spinosa* (3.91%) which was more or less similar to our findings, and the reported lipid content of *Purpura bufo* was  $4.56 \pm 0.54\%$ .

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