

STUDIES ON GASTROPODA (*MONODONTA AUSTRALIS*) FOUND AROUND THE KARACHI COAST: EFFECTS OF SEASONAL VARIATIONS ON BIO-CHEMICAL COMPONENTS

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The effects of seasonal variations on protein, fat, ash, moisture and glycogen of *Monodonta australis* of Karachi coast have been studied. This report has been based on the data collected for a period of one year. Protein and glycogen contents varied significantly was noticed, while fat and ash contents remained constant during the study.

Key words: *Monodonta australis*, Mollusc, Seasonal variations, Biochemical composition.

INTRODUCTION

According to Thiele [1] the class gastropoda has been further divided into 3 Sub-classes i.e. prosobranchia, opisthobranchia and pulmonata. The present study has been confined only to opisthobranchia (*Monodonta australis*), commonly found around the Karachi coast.

The habitat of *Monodonta australis* is the intertidal region of a rocky shore. They generally remain exposed at low tides. They are found in abundance, but the extent of their resources has not been fully assessed. Systematic information regarding their existence, their bio-chemical composition and the effects of seasonal variations could not find during 5 years literature survey but the taxonomical data in a form of a report on gastropoda of Pakistan by Khan and Dastagir [2]. According to a separate survey report [3] the gastropod fauna of Pakistan are expected to be very rich since several species of gastropoda similar to that of Bombay coast.

In the present study a comprehensive survey of the gastropods around the Karachi coast has been undertaken during which it was found that these specimens were only present at Buleji not found from Manora, Sandspit, Hawksbay back water and Korangi creek area. Extensive collection of specimens of *Monodonta australis*, for one complete year (1986-87) has been achieved i.e. at every month from 150 upto 400 specimens were collected after identification. The collected specimen were analysed in the laboratory for their bio-chemical composition and the effects of seasonal variations on their constituents have been recorded.

MATERIAL AND METHOD

The specimens of *Monodonta australis* were procured on a monthly basis from the Karachi coast upto Buleji. The collection of specimen taken during ebttide was good, specially after an hour of low tide, as during this period,

the shells of monodonta generally remain exposed. The animal which remained enclosed in the shell was removed in a corkscrew fashion, with the help of a bent safety pin. The prong of a fork was quickly thrust into the columellar muscle and a sharp yank combined with a twisting motion was given to pull out the animal quite easily. It was then weighed and washed in tap water. The flesh of the animal was minced in a mincer and then dried in an electric oven at 80° for 48 hours. The dried material thus obtained was ground to 20 mesh. The ground powder was used for chemical analysis. Crude protein was determined by a macro Kjeldhal method according to the techniques described in the AOAC [4] by multiplying the amount of nitrogen with a factor of 6.25, to get the percentage of crude protein. Fat was determined by chloroform extraction in an assembly of soxhlet. For ash determination a muffle furnace was used according to the technique described by Winton [5]. Total moisture was estimated in an electric oven at 100° for 6 hrs. The glycogen has been determined by the anthrone method described by Caroll *et al.* (1956) [6] while the acute toxicity of gastropodes (*Monodonta australis*) conducted by the oral route in moral albino mice according to the method given by Drinker and Drinker [7].

RESULTS AND DISCUSSION

Variation in dry matter content is depicted in Fig. 1. The dry weight of tissue increased from 22.4 % in April to a maximum of 27.36 % in July, which may attributed to be mainly due to the availability of good feeding fauna of the sea i.e. plankton of the sea [8] and further due to ripening of gonads as also cited by Ansell [9]. However no significant variation has been noticed in fat content throughout the studies. A similar observation has been cited by Ansari [10] in the black clams. Low protein has been noticed, during the months of March to August Fig. 2.

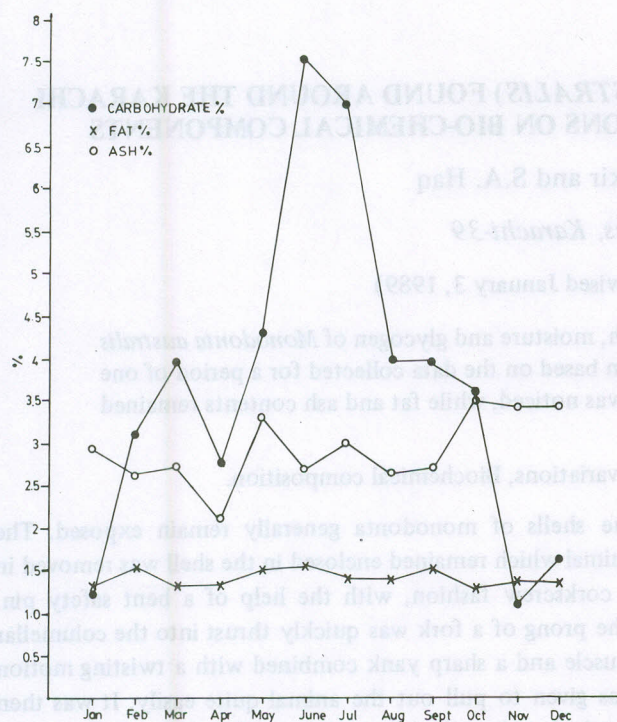


Fig. 1. Seasonal variations in carbohydrate fat and ash contents of *Monodonta australis* (1986-87).

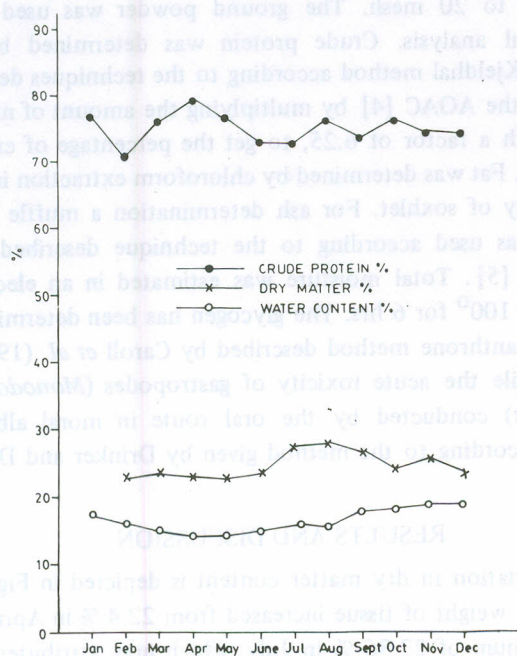


Fig. 2. Seasonal variations in crude protein dry matter and water contents of *Monodonta australis*.

Similar observation has also been made by Ansell [9] and this has been attributed due to spawning period. Decline in protein during the spawning period is also reflected in the reduction of tissue weight [11]. Maximum amount of protein has been estimated during these months. The amount of carbohydrate (glycogen) considerably high in the month of June (7.56%) and lower during the month from November to January (1.27% to 1.64%) Fig. 1. Ansari [10] stated that the changes in carbohydrate may be due to accumulation and utilization of glycogen at different stages like gametogenesis and spawning. The quantity of ash remained almost static throughout the studies Fig. 1.

In order to determine toxicity in the meat of *Monodonta australis*, feeding trial were conducted on Albino rats, and no toxicity has been found. Therefore, *Monodonta australis* can be used as a supplement in the preparation of various feeds, which would not only be a rich source of protein but also the most conventional marine source.

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