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Note

Biochemical composition of the deep-water crab *Charybdis smithii*

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ABSTRACT

Protien,carbohydrade,lipid,meat and water content of potentially commercial deep-water crab *Charybdis smithii* were determined for various size groups. The protien content of meat varied from 59.8 to 71.1, lipid from 6.2 to 8.2 and carbohydrate from 2.4 to 3.4% of dry weight, whereas, the water content ranged between 85.5 and 89.6%.

Deep-water brachyuran crab, *Charybdis smithii* inhabits the shelf edge, surface and subsurface waters of the oceanic regions of seas around India (Silas, 1969; Sulochananeia/., 1991). The paper, reports the result of a preliminary study of biochemical analysis of *C. smithii.*

Crabs for the present study were obtained during the crusie of the Fishery Oceanographic Research Vessel *Sagar Sampada.* Specimens were frozen at - 20°C onboard and subsequent analysis was carried out. Only male crabs in the intermoult stage were used for the present study. Carapace of individual crab was removed and meat of all parts including chelate legs was separated and transferred to a petri dish, weighed and its percentage worked out. The tissue was dried in an oven at 60°C until a constant weight was attained and desiccated for two days. 25mg of the dried tissue was added to 1 ml of 10% trichloroacetic acid, centrifuged for 20 minutes at 3000 rpm and precipitate analysed for protein according to Lowry *et al.* (1951). The supernatant was used for carbohydrate analysis according to Dubois *et al.* (1956). Total lipid was estimated by sulphophosphovanillin method of Barnes and Blackstock (1973). Water content was determined gravimetrically, the weighed tissue was dried for 48h at 60°C and reweighed. The difference in the weight was taken as water content.

Table 1 shows the protein, carbohydrate and lipid content of meat of various size groups. Protein, the major organic constituent in all size groups, varied between 59.8 and 71% of dry weight with a mean of 63.0% (SD=4.1). The maximum protein value was recorded in the size group of 51-55 mm CW and minimum in 56-60 mm CW. Carbohydrate content was very low (2.4 - 3.4%, Mean 2.8%, S.D=0.4). Maximum carbohydrate was obserbved in 61-65mm size group and minimum in 56-60mm size group. Lipid content ranged between 6.2 to 8.2% (mean = 6.9%. S.D.=0.8). The maximum lipid value was noticed in the largest size group of 61 -65mm CW. The meat content of the body varied between 12.2 to 18.6% with a

mean of 15.3% (S.D.=2.1). The maximum meat content was observed in the size group of 56-60mm CW (18.6%) and minimum in size group of 41-45mm CW (12.2%). Water content fluctuated between 85.6 and 89.60% (S.D. = 14).

Protein and carbohydrate content of *C. smithii* are more or less similar to that of other tropical portunid crabs (Badawi, 1971; Radhakrishnan and Natarajan, 1979; Mercy Thomas, 1985). Great variation, however, was noticed in lipid value. The lipid content of *C. smithii* was found to be relatively low when compared with other decapod crustaceans. Generally, in marine invertebrates, lipid is the most variable fraction (Clarke, 1980). In general, males of marine invrtebrates have a lesser lipid content (Clarke, 1980) and lipid content varies with season (Raymont *etal,* 1967).

The percentage of meat of commercially exploited portunid crabs are much higher than that of *C. smithii.* For example, the percentage of meat in *Scylla serrata* is 29%, whereas *Portunus pelagicus* has a meat recovery rate of 39% (Brown, 1986). The meat recovery rate of *Thalamita crenata,* a brachyuran crab varied from 16.4 to 26.3 (Mercy Thomas, 1985). A linear relationship between meat weight and bodylength is reported in S. *serrata* (Chinnamma and James, 1971). The comparative smaller size of C. *smithii* could be attributed to the low meat content. The higher percentage of water in *C. smithii* may be due to the deep water habitat of the animal (Giese, 1969). The present study indicated that the nutritive value of *C. smithii* is more or less similar to that of other commercially exploited crabs.

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TABLE 1. *Protein carbohydrate and lipid (mean and standard deviation) in different size groups* o/*Charybdis smithii *(as percentage of dry weight)*

Size group (Carapace width in mm)	Protein	Carbohydrate	Lipid
41-45	62.1 ±1.6	2.5. ±1.1	6.2 ±0.9
46-50	62.0 + 0.8	2.7 ±1.0	6.3 + 1.4
51-55	71.1+.2.0	2.9±1.6	7.6±0.7
56-60	59.8±2.2	2.4±1.3	6.2±0.5
61-65	60.2 ±1.4	3.4±1.4	8.2 ±1.1
Mean	63.0±4.1	2.8±0.4	6.9 ±0.8

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