

**THE BIOCHEMICAL COMPOSITION OF THE TROPICAL  
INTERTIDAL MYSID *GASTROSACCUS* SP.**

SEVERAL mysids have been analysed as part of investigations into the biochemistry of general marine zooplankton (Raymont, Austin and Linford 1964; Vinogradova 1964; Raymont and Linford 1966, Seguin 1968 and Raymont, Srinivasagam and Raymont 1969). In this study the composition of the tropical, intertidal, substrate dwelling *Gastrosaccus* is compared with analyses for mysids from quite different environments.

Specimens from a huge population of *Gastrosaccus* were taken from the surf beach approximately one mile south of the mouth of the river Vellar near Porto Novo, Tamil Nadu, India. Catches were made between successive waves by scooping up the surface sand in which the animals were temporarily shallowly buried. Separation was carried out by washing the sand through a sieve and the isolated mysids were transferred to bottles of sea water. The mysids were taken to the laboratory and analysed as soon as possible using living healthy animals. Experience has shown that a healthy mysid is transparent and any opacity signifies imminent death. Estimations of dry matter, protein, carbohydrate, lipid, chitin and ash were carried out according to the methods of Raymont *et al.* (1964).

TABLE I

*Biochemical composition of mysids. Data are expressed as % dry weight except water content which is shown as % wet weight*

Species	Water	Protein	Carbo- hydrate	Lipid	Chitin	Ash	Reference
<i>Gastrosaccus</i> sp.	.. 80	60	4	10	12	12	Present study
Mysids	.. —	52	13	27	—	8	Vinogradova 1964
<i>Neomysis integer</i>	.. 78	71	2	13	7	8	Raymont <i>et al.</i> 1964
<i>Leptomysis lingvura</i>	.. —	70	3	11	—	—	Raymont and Linford 1966
<i>Praunus vulgaris</i>	.. —	72	3	13	6	7	Seguin 1968

The results are shown in Table I with data for other mysids. It can be seen that *Gastrosaccus* contains about 14% less protein than *Neomysis*, *Leptomysis* and *Praunus*. Although Vinogradova's mysid protein level is also low these data might be unreliable since certain fractions were calculated by difference (Raymont, Austin and Linford 1968). However, Vinogradova's findings of low protein and high lipid levels were repeated by Raymont, *et al.* (1969) for the bathypelagic mysid *Eucopia*. In general the lipid level for *Gastrosaccus* approximates to those for the three mysids named in the table. Although the carbohydrate content of *Gastrosaccus* appears high it must be remembered that the animals were analysed in a very fresh state; often within one hour of capture. Raymont *et al.* (1968) have already suggested that under similar conditions the carbohydrate content of *Neomysis integer* may approach 4% dry weight.

The significant difference between the tropical intertidal *Gastrosaccus* and the semi-planktonic, temperate *Neomysis* and *Praunus* and the Mediterranean *Leptomysis* is in their chitin and ash contents. In *Gastrosaccus* these combined fractions are high enough to account for the lack of protein. It is proposed that, due to its physical environment, *Gastrosaccus* requires high levels of chitin and ash to strengthen its exoskeleton against the abrasion of sand grains and turbulence of water in strong surf. This hypothesis excludes any effects of latitude on the major constituents of mysids.

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