

are more allied to Chenopodiaceae, but the isolation values (i) and (n) point out a relationship between Basellaceae and the Portulacaceae. The relatively low group affinity (261.1) and high isolation values (33.34 and 17.64) of Aizoaceae indicate that its relationship with Basellaceae is not as close as between Basellaceae and the other two families.

Despite the fact that all families possess betalains<sup>3,4</sup> in common the numerical analysis based on genomic, serological and ultrastructural investigations reveal that the family Basellaceae is very much nearer to Portulacaceae than to Chenopodiaceae or Aizoaceae<sup>5</sup>.

Therefore, it is tentatively suggested that the Basellaceae may be treated as an independent family and should be placed in the vicinity of Portulacaceae and Chenopodiaceae under Caryophyllales.

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## HEPARIN FROM SOME BIVALVE MOLLUSCS

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HEPARIN has been obtained from the marine gastropod *Charonia lampas*<sup>1</sup> and from the surf clam *Spisula solidissima*<sup>2-3</sup>. The present note reports heparin from three species of bivalve molluscs,

Table 1 Heparin activity of the test extracts

Source of tissue	Units of heparin activity per kg tissue
<i>K. opima</i>	283,320
<i>A. rhombea</i>	74,140
<i>C. madrasensis</i>	14,125

*Katelysia opima*, *Anadara rhombea* and *Crassostrea madrasensis*, common in the estuaries of India.

The animals were collected from the Vellar estuary (11°29'N; 79°46'E). The animal meat without the gonad was weighed and minced. The minced tissue was mixed with distilled water and autolyzed for 48 h at 38°C. Extraction and partial purification of heparin were made following the method of Thomas<sup>4</sup>. The test extracts were compared with standard heparin by paper chromatography using a solvent system of water-ethanol-ammonia (39:60:1)<sup>5</sup> and developed in iodine vapour. The activity of the test extracts was determined by azure A assay<sup>6</sup>.

The qualitative analysis of heparin in the three bivalves showed similar  $R_f$  value close to that of the standard heparin.

The unit of heparin activity per kg of tissue is shown in table 1. *Katelysia opima* showed maximum activity. The activity was low in *C. madrasensis*. *A. rhombea* showed intermediate activity. However, all the three species could be potent sources of heparin if HPLC system is used for purification of test extracts.

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