lemon juice for β-carotene or vitamin C, why not take pills of these vitamins for the same effect?' 'Is the effect same or different?' The answer lies in the fact that antioxidant vitamins naturally present in food are a balanced mixture of redox with reduced and oxidized form along with several other compounds which may also be beneficial, whereas every supplement pill, including those containing vitamin C or β-carotene, is unbalanced in this respect. Hence, the naturally occurring antioxidants have many advantages over the synthetic ones.

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On the occurrence of ostracod species from the Kallankurchchi Formation of Ariyalur Group, Tamil Nadu

The Ariyalur Group of rocks have attracted a good deal of attention due to their unique stratigraphic position and this is further enhanced by the presence of prolific fossil assemblage of marine nature. A detailed assemblage of foraminifera was described from these rocks three decades ago by different workers[1–4], but ostracod fauna received less attention compared to foraminifera. However, a few papers on ostracod are available[5–10]. The vertical as well as spatial distribution of ostracodes in the Ariyalur Group is not uniform, and like foraminifera they are rich locally while altogether absent from some beds Over hundred and seventy taxa have been identified so far from the Ariyalur Group[5–11]. They are fairly common in the Sillakkudi Formation (limestone/ calcareous sandstone member 26 m)[6, 10, 11], abundant in the Kallankurchchi Formation (40 m)[6–11], very poorly recorded in the succeeding Ottakkovil Formation (15 m)[6, 11], whereas the Kallamedu Formation (80 m) is devoid of ostracodes.

During the course of a detailed investigation of the ostracod fauna from the Ariyalur Group, Tiruchirapalli district, Tamil Nadu, two ostracod species, namely *Kalyptovalva ovata* (Bosquet) and *Wichmannella* sp. aff. *W. cretacea* Bertels, were found. The find assumes palaeogeographic significance as these species are so far known only from Europe and South America. The object of this paper is to record these species. It was generally agreed that the Ariyalur Group of rocks belong to Campanian–Maastrichtian age[1–6, 12, 13]. But recent investigations on ostracod fauna and calcareous nannoplanktons suggest a Late Campanian–Maastrichtian age[11, 14],

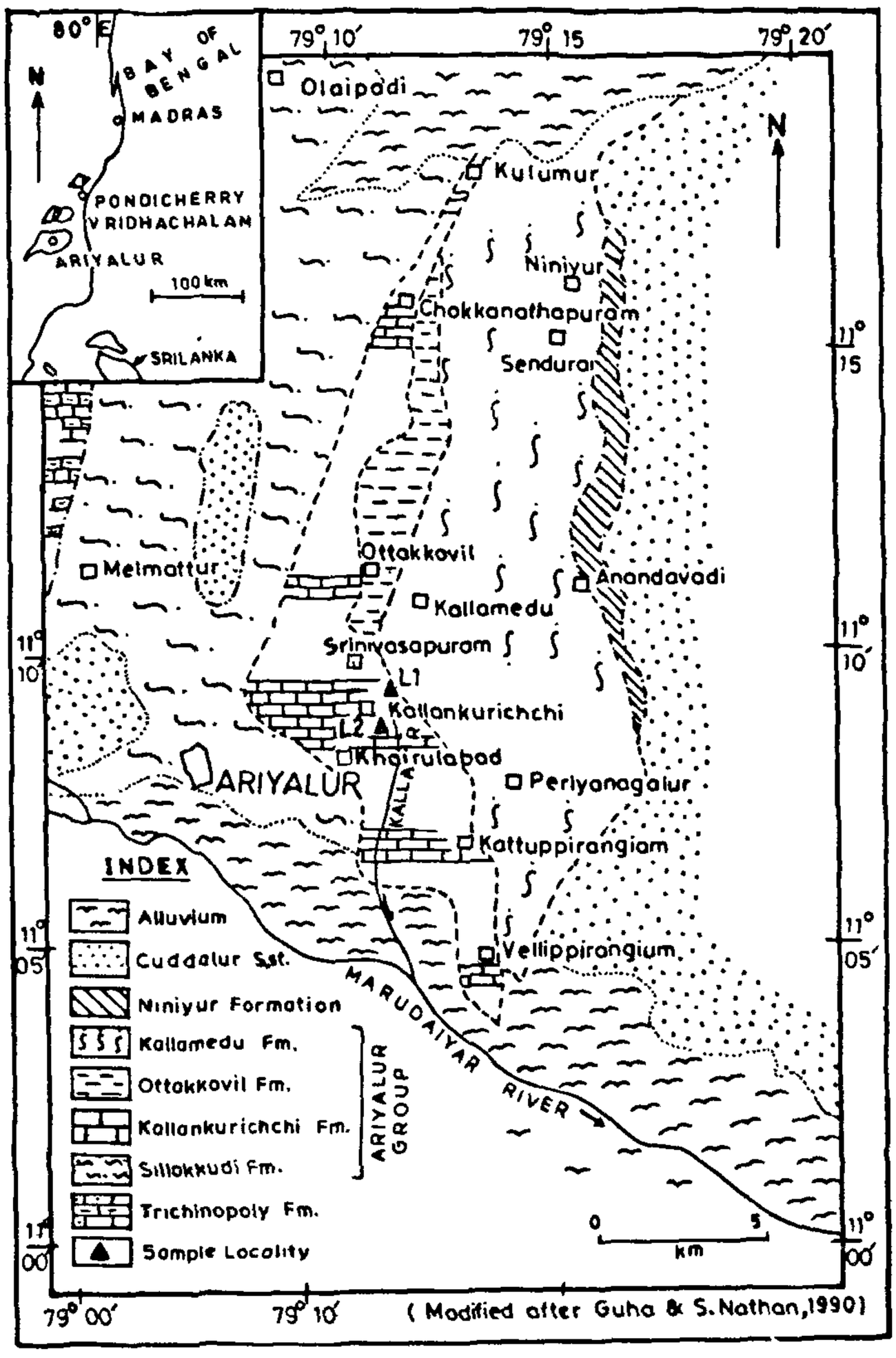
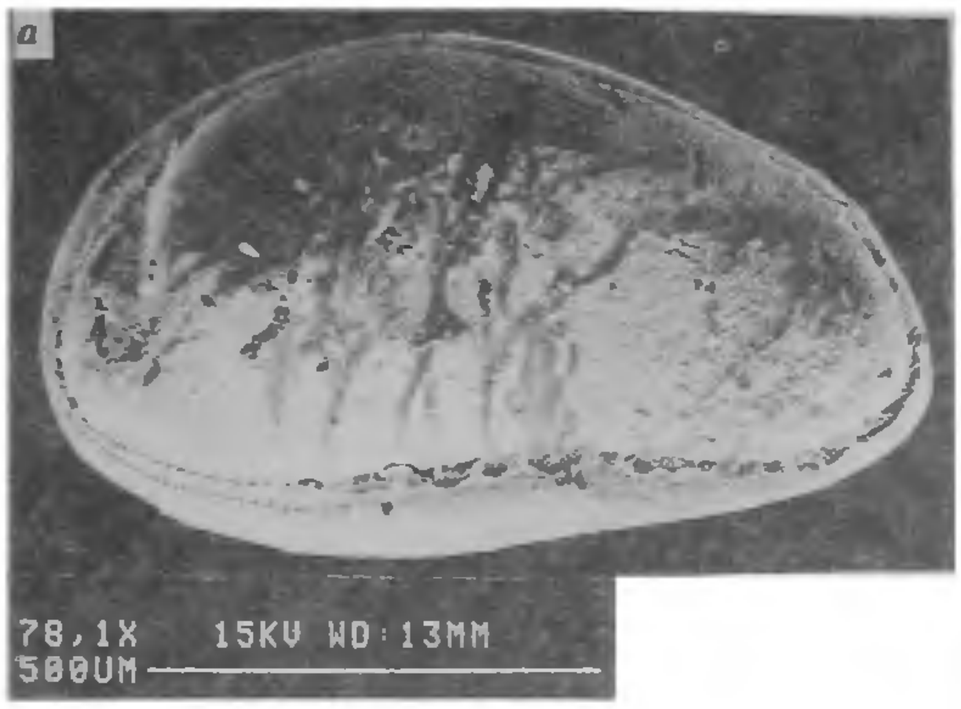
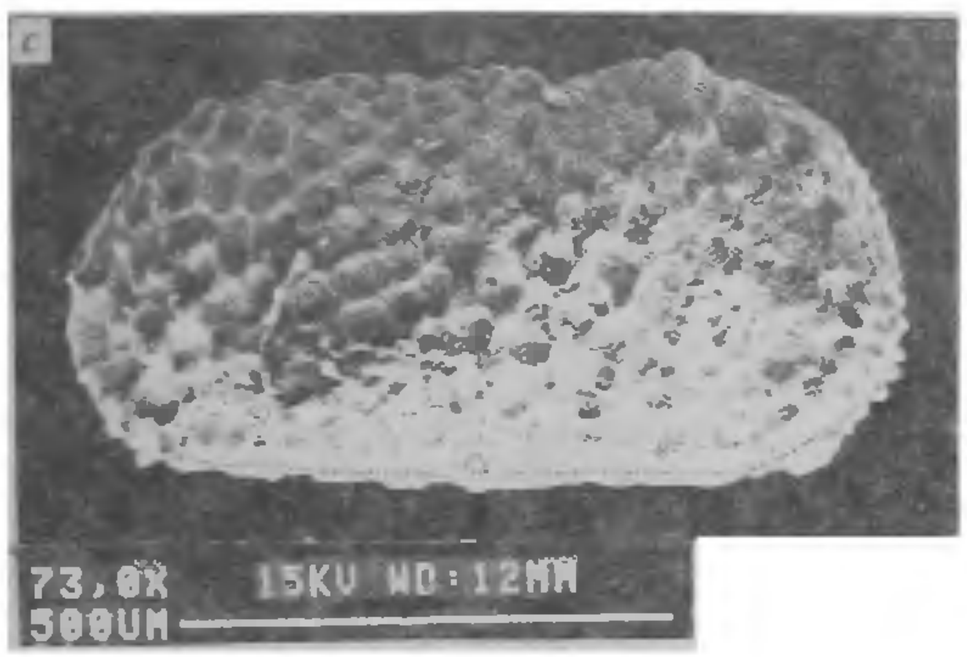


Figure 1. Geological map of the Ariyalur area showing the locations of the samples





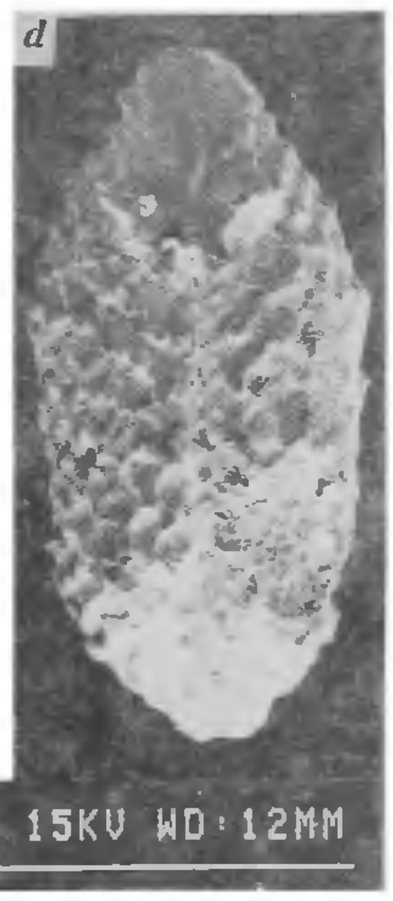


Figure 2. *Kalyptovalva ovata* (Bosquet) (BUGDMFNO 49) *a*, right valve view (slightly touched with ink), *b*, dorsal view *Wichmannella* sp aff *W cretacea* Bertels (BUGDMFNO 50). *c*, right valve view (slightly touched with ink), *d*, dorsal view

whereas Early–Middle Maastrichtian age has been fixed for the Kallankurchchi Formation[11, 14].

The present species are recorded in two different localities of the Kallankurchchi Formation (Figure 1). In locality 1 (1.2 km SE of Srinivasapuram, 11°09′40″N: 79°07′25″E) the rock is arenaceous limestone white to grey in colour, whereas in locality 2 (1.2 km NE of Khairulabad, 11°09′50″N: 79°11′30″E on the left bank of the river Kallar) the rock is reddish brown coarse-grained calcarenite. The species occurring in association with a large number of bryozoans, Ophioroid oscicles, smaller and larger foraminifera along with thick-shelled bivalves such as *Gryphea* sp. and *Alectryonia* sp. indicate that they were laid down in a shallow sea, close to the shore[15].

The species *Wichmannella* sp. aff *W cretacea* Bertels (Figure 2 *c*, *d*) has so far been reported from Fortin General Roca, Rio Negro Province, Argentina[16]. It is characterized by (i) a subrectangular carapace, (ii) obliquely rounded anterior and posterior margins with compressed extremities, (iii) surface ornamented by a primary polygonal reticulation which is subcentrically disposed anteriorly around the subcentral node and has a mostly irregular pattern in the posterior half, and (iv) a well-developed eye and subcentral tubercles. An examination of the illustrated specimen (*Wichmannella* sp. aff. *W cretacea*, Figure 2 *c*, *d*; personal communication letter dated 7.10.1992) by Bertels agrees with the generic placement and considers the Kallankurchchi form to be a new one. Due to the lack of internal details, the paucity of well-preserved material precludes setting up of a new species and only affinity is possible at this level. On the other hand, *Wichmannella cretacea* does not follow any particular order of reticulation, as it is found in the illustrated specimen. The outline is somewhat different, particularly at the posterior margin and, in addition, the reticulum is larger.

Kalyptovalva ovata (Bosquet) (Figure 2 *a*, *b*) has been originally described as *Cytheridea ovata* from the type Maastrichtian of South Limburg, Holland[17]. Later, this species was transferred to the genus *Kalyptovalva*[18]. It is characterized by its solid, thick-walled, inequivalved, egg-shaped shells, left valve much larger than the right valve and overlapping around the entire periphery, and its smooth lateral surface. It is restricted to Maastrichtian age[19, 20]. Therefore, the find of this species in association with *Bairdia cretacea* Veen, *B pseudocretacea* Veen, *B. limburgensis* Veen, *Cytherelloidea kallankurichiensis* Jain, *Echinocythereis apostoleuci* Jain, *Leguminocythereis kayei* Jain, *Kikliocythere szczechurae* Jain, *Xestoleberis pergensi* Veen, *Paracypris limburgensis* Veen and *Macrocypris limburgensis* Veen in the Kallankurchchi Formation further supports the view expressed by earlier workers that the Late Cretaceous (Maastrichtian) ostracod fauna of southern India have greater affinities with the northern hemisphere fauna (northern Tethyan realm). The record of *Wichmannella* sp. aff. *W cretacea* (Figure 2 *c* and *d*) in the Kallankurchchi Formation is in harmony with the view expressed above. It occurs rarely in the Kallankurchchi Formation and seems to be a cosmopolitan species. There are some Cretaceous invertebrates that are cosmopolitan in nature, occurring in India and elsewhere[21]. It is widely believed that there was a free movement of ostracod faunas between West Africa, North Africa, North America, West Europe and India during Cretaceous, although at that time the Indian subcontinent lay to the south of 30°S latitude[22, 21]. As such, there is no evidence

of any similarity between the Late Cretaceous ostracod fauna of southern India and Argentina. The marine ostracod fauna of Argentina (South America) are found in the Late Cretaceous, principally composed of species belonging to the genera *Wichmannella*, *Trachyleberis*, *Platicythereis* and *Wolburgia* and have affinities with the ostracod fauna of Africa rather than with the northern hemisphere faunas[24, 25]. A problem is, therefore, posed concerning the palaeogeographical position of India during the Late Cretaceous[26]. Possibly, India was much closer to the northern shore of Tethys than the current plate tectonics accepts or else Tethys was shallower[27]. Similar observations have been made on planktonic foraminifera of the Late Cretaceous of Madagascar and of the Indian subcontinent[28]. Present data concerning the ostracod fauna from the Late Cretaceous of India are still too scattered and imprecise to provide a valid answer to this problem. A detailed analysis of these fauna may certainly help in solving this problem[26].

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REPOSITORY The illustrated specimens are deposited in the museum, Department of Geology, Bangalore University, Bangalore, under the heading BUGDMFNO 49-50

ACKNOWLEDGEMENTS This paper has considerably benefited from Prof S B Bhatia, who provided the much needed literature out of his personal collection Prof Alwine Bertels, Department of Geology, University of Buenos Aires, Argentina, helped in the identification of ostracod species Dr G S Avadhani, Department of Metallurgy, IISc, Bangalore, is thanked for SEM photography, and the Geological Society of India, Bangalore, and CSIR, New Delhi, for financial assistance

Received 12 September 1994, revised accepted 25 January 1995

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Comments on 'Value addition: A threat to *Calophyllum* species' (*Curr. Sci.*, 1995, 68, 243)

Ranjit Daniels and V. Patil have rightly expressed a concern for the forest species of the genus *Calophyllum* in the wake of possible commercialization of their organic compounds.

Exploitation without consideration for future is a folly. On the other hand, can we afford to overlook altogether the other side of the coin, viz. a drug to treat a dreaded disease and at the same time income generation for the rural poor without sacrificing the scarce forest resources!

Calophyllum inophyllum is a common tree in the coastal tracts, as pointed out by the authors. As it regenerates fairly easily in this habitat, plantations can be undertaken in the available wastelands along the coastline.

Marshy, saline (*Khar*) lands can be afforested with *Salvadora persica*, a back mangrove species, which not only would provide a green cover for such wastelands but can also be a source of extra income for the underprivileged communities as the oil obtained from its seeds is used by the cosmetic industry.

The cloves are mostly imported from Zanzibar or Penang. The clove tree (*Syzygium aromaticum*), requiring a very humid climate, can only be grown in the Western Ghats in Kerala with its short dry season but at the expense of natural forests. It would be worth experimenting grafting branches of the clove tree on its close Indian generic counterpart *Syzygium cumini*, a hardy, indigenous tree