SUMMARY AND CONCLUSIONS

Mixed populations of different kinds of seaweeds occur in the intertidal and shallow subtidal environments of our shores. Among the sea weeds reported from different localities of the east and west coasts of India, Lakshadweep and Andman and Nicobar Islands, a few red and brown algal taxa are useful as sources of phycocolloids. For instance, Gelidiella acerosa, Garcilaria edulis, G. verrucosa and other Gracilaria spp. yield agar-agar and Hypnea species yield Carrageenin. Species of Sargassum and Turbinaria are the important raw material for algin production. Many other seaweeds reported from Indian waters can be used as food, fodder and fertilizer. The distribution of these useful seaweed populations in different maritime states have been studied by many phycologists.

In India, marine algae are studied from about 19th century. The earlier knowledge was largely due to the studies of Boergesen (1940). Since then various scientists have worked on Indian marine algae. Though marine algae from Indian and coast of Maharashtra are being studied; from about last sixty years, not much work is on marine algae of Maharashtra coast in general and Malvan in particular. Looking to the present status of the seaweed industry and resources position in the country, it is necessary to find out productive seaweed areas and harvesting

seasons and steps to be taken for proper management.

During last fifty years the industrial revolution has resulted in polluting coastal environment, mainly due to the effluent discharges and other human resources. this has influence the ecological and biochemical conditions of the seawater around; in which all effluents are released. Since the marine algae are getting more and more importance commercially, it is necessary to exploit various pockets of Indian coast having luxurient algal growth in view to inculcate the idea of marine park.

Malvan (Sindhudurg district) is unique station, situated on North latitude 16.03' and East longitude 73.28' on the West coast of Maharashtra (India). This location is ideally suited for the development of luxurient algal vegetation. Moreover it is a 'paradise of algae' and hence selected for the present study.

The subject matter of this dissertation based on study of algal vegetation, hydrological data, organic consituents such as chlorophylls, carotenoids, carbohydrates, polyphenols, proteins, amino acid composition mineral uptake and C, H, N and P analysis. In addition, the efforts have also been made to

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exploit the potentiality of the algae for alginate, mannitol and agar-agar content.

Method of Approach

The algal material was harvested in post-monsoon, winter and summer season. The algae selected for the present study include Ulva fasciata, Chaetomorpha media, Dictyota dichotoma, Padina tetrastromatica, Sphacelaria furcigera, Ceramium rubrum and Hypnea valentiae. The chlorophylls and carotenoids were analysed on fresh weight basis while rest of the parameters from dried algal powder. For the analysis standard methods were followd :

The results are discussed under the light of available up-to-date literature.

Conclusions

1. In general green algae were dominant during September to December, brown algae in December to March and red algae in December to April. Sphacelaria furcigera and Chaetomorpha media were more dominant in the month of September only.
2. Temperature and conductivity values were less during the monsoon months and later increase gradually.
3. pH range of seawater in different season was found to be quite congenial for the growth of algae.

4. Total chlorophyll values were found more during winter and declined in summer month. Positive correlation was seen in chlorophylls level and magnesium content.
5. Green algae appears to be rich in carotenoid content than red and brown algae.
6. Maximum ash content found in late monsoon and early winter.
7. Lipid content in green algae well in the range of 0.35 - 1.7 %, brown algae (0.4 - 1.7%) and red algae (0.2 - 0.8%).
8. Ash, lipid and protein levels were found in higher ebb from early winter upto early summer.
9. Carbohydrate level in Ulva fasciata was comparatively higher than that of brown and red algae.
10. Phaeophycean members exhibit more polyphenol content in winter season as compared with chlorophycean and rhodophycean members.
11. Proline content was high in all algae during summer months, while they do not exhibit any significant change in winter season.
12. Ceramium rubrum possess high C and H content, Ulva fasciata and C. rubrum. appear to be rich in N content while Ulva fasciata, Chaetomorpha media and Hypnea valentiae possess high P content.
13. Variation in C : N and N : P ratios can be attributed to the phenological stages of growth.

14. Higher concentration of Na, Ca, Mn, Cu, Cd, Cr, Pb and Ni were found in the early summer while K and Zn in post monsoon and Mg and Fe in winter season. These variations in inorganic constituents may be due to the environment to which the seaweeds are exposed.

15. Detection of heavy metals such as Pb, Cr, Ni, Cd in algal tissue posed a danger.

16. Glycine, serine, aspartate, threonine, tyrosine, methionine and valine present in varying concentrations in all the algae.

17. Phenolic sompounds viz. coumiaric acid, querecetin derivatives, myrecetin, catechol, caffeic acid and tannic acid showed their presence in all algae with slight variation.

18. Mannitol content in brown algae ranged between 2.85 - 4.5% and alginate content was appreciably higher in Dictyota dichotoma than that of Padina tetrastromatica and Sphacelaria furcigera.

Thus, over all message emerged out from the present dissertation, clearly states that to judge the potentiality of algae as a source material for industries, and as a food and fodder, it is necessary to study the seasonality in biochemical composition.

Besides, accumulation of heavy metal which has posed a lerking danger of pollution at Malvan needs to be investigated on war fruiting and the species which serve as a bioindicators of marine pollution be worked out.