

Lipids of Marine Macrophytic Algae

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Marine macrophytes belong to three systematic groups most usually considered as divisions: *Rhodophyta*, *Phaeophyta* and *Chlorophyta*. Actually, taxonomy of marine macrophytes is more sophisticated. A lot of new different chemical substances, including a new lipid group, oxylipins were isolated from these algae

The present communication gives a general picture of fatty acid, first of all, polyunsaturated fatty acid (PUFA) and polar lipid (PL) distribution in algae based on our own and literary information. Some new experimental data on the topic are included too.

The distribution of lipids in algae is affected by different factors. But, first of all, it is determined by systematic position of algae. All of the algal divisions are distinctive in their lipid quantity and even quality. They have a specific PUFA composition and especially differ in some usual and less common PL patterns. The best chemotaxonomical markers are phosphatidylcholine (PC), phosphatidylserine, diacylglyceryl-(N,N,N-trimethyl)-homoserine (DGTS), diacylglyceryl-hydroxymethyl-(N,N,N-trimethyl)- β -alanine (DGTA) and inositolphosphorylceramide (IPC)]. Our results are in agreement with taxonomical systems which separate *Phaeophyta* and *Chlorophyta* into two classes each. Distribution of PC and DGTA supports the suggestion of L.P. Perestenko to transfer the order *Dictyotales* from the class *Phaeosporophyceae* to the class *Cyclosporophyceae*.

Marine algae are convenient raw material for the isolation of valuable PUFA and PL. Some species of *Rhodophyta* are unusually rich in eicosapentaenoic acid (EPA) and arachidonic acid (AA). So, *Palmaria stenogona* contains more than 70% of its total fatty acid as EPA and *Gracilaria verrucosa* includes more than 50 % of AA among its FA. The brown alga *Sargassum pallidum* is unique by its high level of 20:3n-6 PUFA.

It was found that *S. pallidum* have a great difference in fatty acid composition of different part of its thallus. Less profound differences in lipid composition along thallus were found for some other brown algae.

We detected the most interesting PL in *Rhodophyta*. It is IPC, a representative of both inositol- and sphingolipids, two groups of lipids with high biological activity. IPC had been found previously as a minor component in some yeast, fungi and protozoans. However, red algae are the best source for its isolation. The distribution of IPC in different groups of *Rhodophyta* and some its chemical characteristics are given.