Global biodiversity of the aquatic medicinal plants

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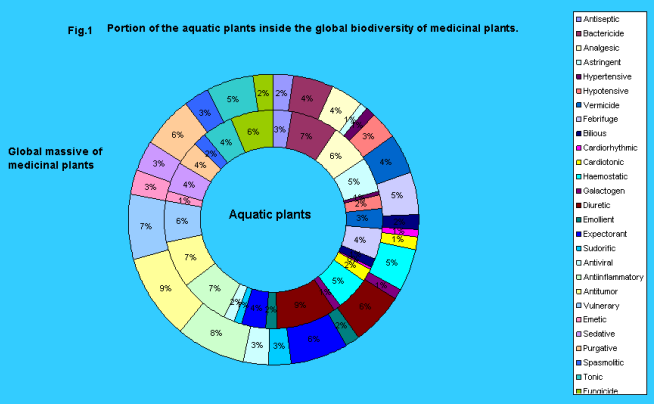
Fig.1 **Portion of the aquatic plants inside the global biodiversity of medicinal plants.**



A global database on medicinal plants (about 12000 species) and biologically active substances found in them (about 1200 items) has been made in the Main Botanical Garden Russian Academy of Sciences. It allows us to evaluate biodiversity of the ecological groups of medicinal plants (hygrophytes, epiphytes, succulents and so on), reveal appropriateness of the geographical and ecological localization of plants displaying certain kinds of biological activities and so on. Now a fundamental monograph "Medicinal Botany" has been being prepared using this database and other sources of information.

Totally data on application of 200 species belonging to 99 genera and 47 families of aquatic and riverside plants in folk and official medicine and their chemical composition were taken into consideration.

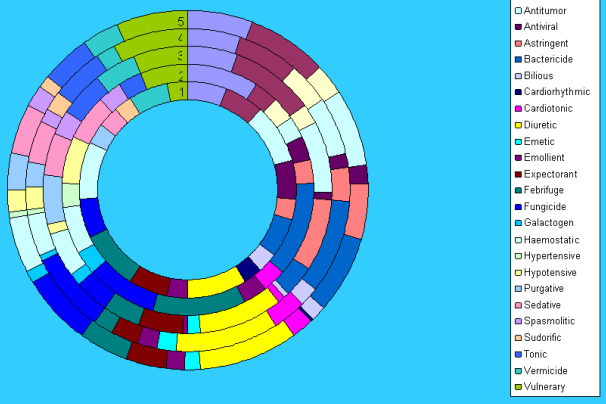
Groups displaying cardiorhythmic and cardiotonic, hypo- and hypertensive, spasmolitic and emetic activities are poorer represented among aquatic plants in comparison with the whole massive of data on medicinal plants of the whole world, while part of diuretic, fungicide and astringent plants is noticeably higher (fig.1).

Analysis of 4 groups of aquatic plants differing in their attitude towards water habitat has been undertaken:

1. Floating (not attached to substrate) plants;
2. Attached to the bottom plants with submerged leaves;
3. Attached to the bottom plants having both submerged and emerged leaves;
4. Attached to the bottom plants having only aerial leaves, usually riverside, swampy.

Free floating in the water plants, not attached to substrate as well as rooted in substrate and having only submerged leaves are least used in folk and official medicine. A third group of these very similar in biological activity groups differs a bit from others in a little content of species manifesting antiinflammatory and a relatively large content of febrifugal (fig.2).

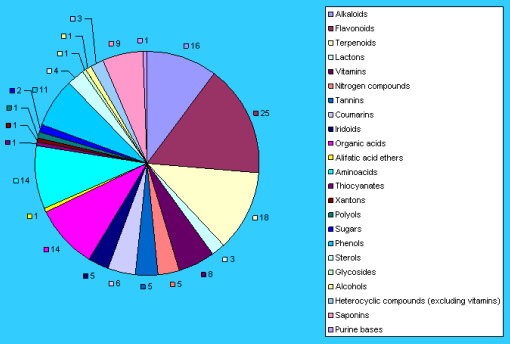
Fig.2 **Biological activity of aquatic and riverside plants**



Numbers mark spectra of biological activity of the following groups of the aquatic plants:

1 - group I
2 - group II
3 - group III
4 - group IV
5 - total massive of the aquatic plants

Fig.3 **Number of biologically active substances**



155 biologically active substances (BAS) are registered in aquatic plants. Their analysis showed predominance of flavonoids (among them rutin, luteolin and quercetin are most frequently found) to a lesser extent terpenoids and alkaloids (fig.3). P-coumaric acid can be noted as a very common substance inside the investigated group.

No specific BAS characteristic only for aquatic plants and absent in terrestrial ones have been marked. On the contrary some groups of BAS occurring in terrestrial plants are absent within the chemical composition of the aquatic plants.