

Secondary Metabolites as Chemotaxonomic Markers in Polygonaceae

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Usefulness to man is the main stimulus for chemists to investigate plants. Modern phytochemistry is often more or less intimately connected with plant taxonomy and the ambition to help taxonomists in their endeavour to arrive at truly natural classifications of the many groups of plants recognizable in nature are additional reasons for initiating chemical investigations of plants. Phytochemists and economic botanists are often looking for new sources of important chemical compounds or classes of constituents and generally they will be most successful when they use the chemotaxonomic approach. Comparative phytochemistry combined with an adequate plant classification is an excellent guide for chemical exploration of the plant world.

Anthraquinones and flavonoids are highly characteristic secondary metabolites of *Polygonaceae*. Detection of anthraquinones made a considerable contribution to appropriate classification and evolution of this family. According to R.Jaretzky (1925), absence of anthraquinone substances is a more advanced feature than their presence. The critical evaluation of the chemical characters in *Polygonaceae* permitted us to differentiate anthraquinone – containing genera and species and imagine the picture of evolution of this family all in all. Vast subfamily *Rumicoideae* with two genera *Rheum L.* and *Rumex L.* is more primitive than *Polygonoideae*. The problem of genera in *Polygonaceae* is actual so far notably for genus *Polygonum L.s.lat.* Differentiation of *Polygonum L.s.lat.* according to characters «the composition of anthraquinone- and flavonoid – aglycones» was evaluated and conclusion about its sections as new genera was made.

Geographical and ecological variations may be the result of the plasticity of individual genotypes (modifications) or of a genetic heterogeneity of plant taxa. The phytochemist is mainly interested in chemical polymorphism which may or may not be correlated with other types of variations. Chemical polymorphism is one of the starting points of differentiation. Species which comprise several chemical races and have vast area such as *Aconogonon alpinum (All.) Schur*, *Bistorta major S.F.Gray*, *Knorringia sibirica (Laxm.) Tzvel. etc.* are called polytypic. Variants and races represent essential entities of species evolution (speciation). Intraspecific categories in *Polygonaceae* reveal themselves mainly across glycoside forms of anthraquinones and flavonoids.

Secondary metabolites vary in their distribution within the plant. The amount and composition of anthraquinones and flavonoids are governed by the age of plant or its part, by the plant's locality and habitat. In accordance with this problem it is proposed for taxonomic purposes the term «biochemical profile of individual» by analogy with «biochemical profile of species» by Ellison et al. (1962). Only after research of a great number of the former one may conclude about the latter.