

Chemical Composition of Siberian Plant Species of the *Thalictrum* Genus. Biological Activity of the Isolated Saponins

Vladislav I. Lutsky, Aleksandra S. Gromova, Natalia N. Trofimova, Elena A. Khamidullina
and Arkady A. Semenov

Irkutsk Institute of Chemistry, Siberian Division RAS, Irkutsk, 664033, Russia

Fax: (3952) 356046, E-mail: admin@irioch.irk.ru

Investigation of the chemical composition of drug plants growing in Eastern Siberia represents the major research trend of the Laboratory of Natural Compounds, Irkutsk Institute of Chemistry (ICh), Siberian Division of the Russian Academy of Sciences. In particular, the composition of saponins and flavonoids, the most wide-spread species of the *Thalictrum* genus has been studied in detail. Prior to our investigation the saponins of this genus have not been well understood, therefore much attention has been given to this interesting class of natural compounds. It turned out that some species (*Thalictrum simplex*, *Th.baicalenses*) contained only minor amounts of saponins whereas other species (*Th.minus*, *Th.foetidum*, *Th.squarrosum*) produced up to 2.5-3% of triterpenoid glycosides.

From all the examined species over 38 triterpenoid glycosides and their genins have been isolated. Of these 28 are new compounds. Genins of the saponins isolated rank among pentacyclic (oleanane series) and tetracyclic (cycloarthane series) triterpenoids. The hydrocarbon portion of glycosides consists of 1-5 monosaccharide residues in the pyranose form having no branches, whereas the molecules themselves are represented by mono-, bis- and even trisdesmosides.

From the same meadowrue species a few flavonoids and their glycosides rarely met in plants have been isolated.

Fine chemical structure including relative and absolute configuration of chiral centers have been establishes for all the new compounds. The glycosides structures was mainly determined using spectral data (two-dimensional NMR spectroscopy and high performance FAB mass spectrometry, X-ray analysis) for both the compounds and their derivatives without chemical destruction of the molecule.

The undertaken chemical investigation of the above meadowrue species allows saponins to be proposed as markers for interspecific classification of the *Thalictrum* genus.

The biological activity of new saponins has been investigated.