
PLENARY PRESENTATIONS

**THE PLANT LIGNAN SEVANOL AND ITS ANALOGUES, A DECADE OF
GLOBAL RESEARCH AIMED AT PRACTICAL APPLICATION**

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The target-oriented search for new remedies in medicinal plants growing on the territory of the former USSR led to the discovery of a unique molecule with analgesic properties in an extract from the plant *Thymus armeniacus*, collected in the Lake Sevan region of Armenia. In 2012, the structure of this molecule, named Sevanol, was published, and its inhibitory activity on the molecular target — the ASIC ion channel was demonstrated. It exhibited a reversible inhibitory effect on both the transient and sustained current of mammalian ASIC3 channels. Recent electrophysiological experiments have shown that at high micromolar concentrations, the compound also effectively inhibited homomeric ASIC1a and, at sub- and low micromolar concentrations, positively modulated the currents of $\alpha 1\beta 2\gamma 2$ GABAA receptors. Several methods have been developed for a chemical synthesis of this difficult molecule, which keep 6 chiral centers in the structure. This allowed for the production of a sufficient amount of Sevanol needed for the preclinical trials, which confirmed the safety and efficacy of its using at parenteral administration in rodents. Further research identified the activity for enantiomeric molecules and the importance of various substituents at epiphylic acid, which constituted the core of the Sevanol's structure. Developed analogues generally exhibited reduced ability to inhibit the ASIC ion channel and were less effective in pain and inflammation models but retained the potential as drugs. Currently, Sevanol is actively used for fundamental research, but there is hope for its advancement into practical usage.

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