

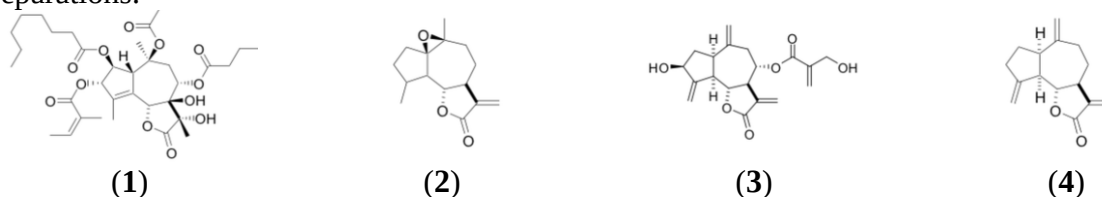
POSTER PRESENTATIONS

BIOSYNTHESIS OF BIOLOGICALLY ACTIVE GUAIANOLIDES

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Among the biologically active sesquiterpene lactones of the guaiane structure, particular mention should be made of thapsigargin (1), arglabin (2), cynaropicrin (3) and dehydrocostus lactone (4), which serve as the active substances of original medicinal preparations.



The biosynthetic pathway of arglabin (2) formation proceeds via costunolide and kaunilide according to the scheme presented in Figure 1.

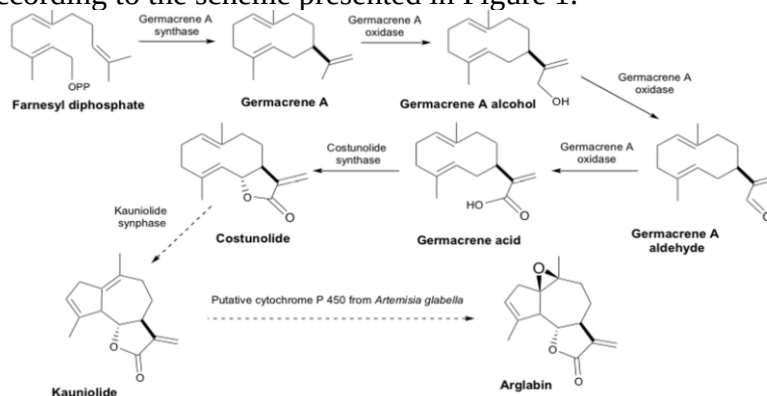


Figure 1 – Proposed scheme of guaianolide biosynthesis

The stages responsible for the formation of the guaiane structure (dashed arrows) are still poorly studied, but they may likewise proceed under the action of the corresponding enzymes of the cytochrome P450 group.

In the course of studying the biosynthesis of guaianolides in *Artemisia glabella* Kar. et Kir., the mRNA nucleotide sequences of the enzymes germacrene A synthase (GAS, EC 4.2.3.23), germacrene A oxidase (GAO, EC 1.14.14.95) and costunolide synthase (COS, EC 1.14.13.120), which are involved in the biosynthesis of costunolide, were identified and determined. Fragments of the target genes were amplified using specific primers and sequenced. The obtained sequences of the AgGAS, AgGAO and AgCOS mRNA fragments have been deposited in GenBank under the accession numbers MT276314, MT276315 and MT276313, respectively.

Comparative analysis of the obtained sequences showed their high (>90%) identity with the GAS, GAO and COS genes of other members of the *Asteraceae* family.