

ORAL PRESENTATIONS

SESQUITERPENE LACTONES IN MEDICINAL CHEMISTRY

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Natural plant compounds play an important role in therapeutic approaches for the treatment of infectious, oncological, neurodegenerative and other diseases. They also serve as a significant source of basic scaffold structures in the search for new molecules effective against specific biochemical targets. Sesquiterpene lactones are oxygen-containing derivatives of terpenoids with a single, typically γ -lactone ring and various functional groups. These secondary metabolites are widespread in plants of the Asteraceae family and exhibit a broad profile of pharmacological activity. Their availability (some species contain up to 5-10% of dry raw source) and reactivity make this class of compounds promising for medicinal chemistry. Currently, more than 6,000 representatives of this class are known (40 years ago, only about 600), covering over 30 skeletal types.

Over the past 5 years, a significant number of studies have emerged focusing on the mechanisms of action of long-known and seemingly forgotten members of this class. Alantolactone has been shown to inhibit the oncogenic proteins YAP and TAZ, which are key effectors of the Hippo signaling pathway [1], while amino derivatives of epoxyalantolactone have been shown to exhibit a significant inhibitory effect on JAK2, which is inextricably linked to the JAK/STAT signaling cascade [2]. Meanwhile, attention to some compounds has not waned, and has actually increased thanks to medicinal chemistry methods. Artesunate, dimethylaminoparthenolide, and mispargin are in various stages of clinical trials as antitumor agents. Artemisinin and its derivatives exhibit impressive activity in specific model biological systems, in addition to their well-known antimalarial effect.

References:

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2. Todsaporn, D.; Sanachai, K.; Aonbangkhen, C.; et al. Identification of novel JAK2 inhibitors from amino derivatives of epoxyalantolactone: In silico and in vitro studies. *Int. J. Mol. Sci.* 2026, 27, 329. 10.3390/ijms27010329

This work was supported by the budget of the IPAC RAS State Targets (topics №№ FFSG-2024-0021 and FFSG-2024-0023).