

PLENARY PRESENTATIONS

PHYTOCHEMICAL STUDY OF TERPENOIDS AND PHENOLIC COMPOUNDS OF PLANTS OF THE GENUS *Perovskia* OF THE FLORA OF UZBEKISTAN

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Perovskia Kar. is a small genus belonging to the subfamily *Nepetoideae* of the family *Lamiaceae*. It contains only 9 species of subshrubs, the majority of which (7 species) grow wild in the mountainous regions of Central Asia. From here, the range of these plants extends through Afghanistan and northern Iran to Pakistan and northern India. Species of the genus *Perovskia* are essential oil, food, honey, dye, and medicinal plants. In Uzbekistan, 4 species of plants of the genus *Perovskia* grow (*P. angustifolia*, *P. scrophulariifolia*, *P. botschantzevii*, *P. kudrjaschevii*), the phytocenoses of which occupy significant areas. Plants of this genus have medicinal properties that are currently insufficiently studied. In folk medicine, a decoction of the leaves of *P. angustifolia* is used as an anthelmintic, wound-healing, and antiseptic agent. The aerial parts of *P. scrophulariifolia* are used in folk medicine to treat scabies, sunburn, skin, and gastrointestinal diseases. Literature reports the antioxidant, antibacterial, antiviral, antifungal, insecticidal, anticholinesterase, antispasmodic, cytotoxic, and antiprotozoal activity of extracts, essential oils, and individual compounds isolated from plants of this genus.

We are conducting a systematic study of the chemical components of plants of this genus growing in Uzbekistan. For the first time, the component compositions of the essential oils of *P. botschantzevii* and *P. kudrjaschevii* have been studied. A total of 53 natural compounds were isolated from the four studied *Perovskia* species, including two phenolic acids, 13 flavonoids, 19 diterpenoids and nor-diterpenoids, 12 triterpenoids, and eight phytosterols and other classes of compounds. The structure of the isolated compounds were confirmed by studying IR, UV, ^1H and ^{13}C NMR spectra, as well as COSY, HSQC and HMBC experiments. The structures and spatial configurations of the new natural compounds perangustin, perangustinin, scrofulin, and salviamon B were established. For the first time, the spatial configurations of one flavonoid, seven diterpenoids, and two triterpenoids were determined using X-ray diffraction analysis.

Pharmacological studies revealed biologically active compounds among the isolated substances, possessing antioxidant, anti-inflammatory, hepatoprotective, antimicrobial, and cytotoxic properties. The studied plants may be sources of rosmarinic acid, cryptotanshinone, and 1,8-cineole, which possess valuable biological properties. The obtained data can be used in the chemosystematics of plants of the genus *Perovskia*.

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