

ORAL PRESENTATIONS

EFFECTS OF SALICYLIC ACID ON PHOTOSYNTHETIC PIGMENT CONTENT IN THE LEAVES OF *Astragalus sieversianus*

N.S. Otajonova, E.R. Kurbanova, R.P. Zakirova

*S.Y. Yunusov Institute of the Chemistry of Plant Substances, 77, Mirzo-Ulugbek Str.,
Tashkent, 100170, Uzbekistan*

Astragalus sieversianus is a promising medicinal plant species owing to its high biological potential and pharmacological importance. As climate change intensifies abiotic stress, the development of environmentally friendly strategies to enhance plant stress tolerance has become increasingly important. Photosynthetic pigment content is one of the most informative indicators of plant physiological status, as it reflects photosynthetic efficiency, stress tolerance, and plant productivity.

Salicylic acid (SA) is an important plant signaling molecule involved in the regulation of plant responses to environmental stress. Previous studies have shown that foliar application of SA enhances chlorophyll and carotenoid accumulation, alleviates oxidative damage, and improves photosynthetic efficiency. In addition, SA acts as an effective elicitor by activating plant defense responses, stimulating the biosynthesis of secondary metabolites, and enhancing plant tolerance to adverse environmental conditions.

The aim of the present study was to evaluate the effect of foliar application of salicylic acid on photosynthetic pigment content in the leaves of *A. sieversianus* grown under the environmental conditions of Tashkent, Uzbekistan.

The experiment was conducted in 2026 at the experimental field of the Institute of the Chemistry of Plant Substances, Academy of Sciences of the Republic of Uzbekistan. Plants were treated at the budding stage by foliar spraying with a 0.001% aqueous solution of salicylic acid. Floraxan was used as the reference biostimulant.

Foliar treatment with salicylic acid significantly increased the content of photosynthetic pigments compared with the untreated control. Chlorophyll a content increased by 14.6%, chlorophyll b by 8.9%, total chlorophyll (a + b) by 13.0%, and carotenoid content by 11.3%. These results indicate that salicylic acid enhances the functional activity of the photosynthetic apparatus by promoting photosynthetic pigment biosynthesis, thereby improving photosynthetic efficiency.

In conclusion, foliar application of salicylic acid stimulates physiological and biochemical processes in *A. sieversianus*, leading to increased photosynthetic pigment content. These findings highlight the potential of salicylic acid as an environmentally friendly biostimulant for enhancing photosynthetic efficiency and improving the adaptive potential of this rare medicinal plant species.

This research was funded by the Budget Program for Fundamental Research of the Academy of Sciences of the Republic of Uzbekistan.