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**Effects of Ag<sup>+</sup> Ions and Methyl Jasmonate on PAL and TAT Gene Expression and Activity and Phenolic Acids Content in *Perovskia Abrotanoides* Karel.**

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*Perovskia abrotanoides* Karel. has several pharmacological properties, including antibacterial, antifungal, anti-cancer, and HIV antiviral effects. These effects are attributed to the presence of phenolic acids and tanshinones in this plant [1, 2]. The main purpose of this study was to investigate the stimulatory effects of Ag<sup>+</sup> ions and methyl jasmonate (MeJA) on gene expression and activity of PAL and TAT enzymes, as well as total phenolic acids content in *P. abrotanoides*. In this assay, 40-day-old plants were cultured on MS medium containing 50 μM MeJA and 15 μM of Ag<sup>+</sup> ions separately. Then activities and gene expression of PAL and TAT were measured in plants at eight time point (0, 4, 8, 12, 24, 48, 72, and 120 hours) after elicitation. The highest values of TAT gene expression were estimated in plants after 12 and 72 hours elicitation with MeJA (9.77±0.23) and Ag<sup>+</sup> ions (5.25±0.35), respectively. Also, the maximum levels of PAL gene expression were achieved in plants after 12 hours elicitation with Ag<sup>+</sup> ions (9.7±0.12) and 24 hours elicitation with MeJA (10.07±0.25). Our results indicated that TAT and PAL activities were more sensitive to MeJA than Ag<sup>+</sup> ions in the treated plants. So that, the highest levels of TAT (109.33±2.04 nKat/mg pr) and PAL (83.03±2.9 nKat/mg pr) activities in the treated plants were obtained after 12 and 120 hours elicitation with MeJA, respectively. Also, the maximum content of phenolic acids (14.09±0.20 mg rosmarinic acid/g DW) was measured in plants after 72 hours elicitation with MeJA. In conclusion, the finding of this study showed that the two elicitors were effective on total phenolic acids content via increasing the activity and gene expression of TAT and PAL in *P. abrotanoides*.

**Keywords:** *Perovskia abrotanoides* Karel., Ag<sup>+</sup> ions; Methyl jasmonate, PAL, TAT

**References**

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