

## Abstract

# Determination of Antioxidant Capacity, Phenolic Acid Composition and Antiproliferative Effect Associated with Phenylalanine Ammonia Lyase (PAL) Activity in Some Plants Naturally Growing under Salt Stress <sup>†</sup>

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**Abstract:** Secondary metabolites are involved in plant response to salt stress and provide a significant contribution to the antioxidant and anticancer activity of plant tissues. PAL is a key gateway enzyme in the secondary metabolic pathway. The objective of this study is to determine the antioxidant capacity, phenolic acid composition and antiproliferative effect associated with PAL activity in some plants naturally growing under salt stress. Firstly, PAL activity and antioxidant capacity of *Cyathobasis fruticulosa* (CF), *Salsola nitraria* and *Salvia halophila* were evaluated. In addition, phenolic acids in the extracts were screened by LC-MS/MS. Antiproliferative effects of the extracts on HT-29 cells were determined by MTT assay. Among all three plants, CF stood out in terms of all the results. CF had the highest PAL specific activity and antioxidant capacity. The richest plant extract in terms of phenolic acids were found to be CF. CF exhibited a marked antiproliferative activity against HT-29 cells compared to other extracts. In conclusion, high PAL activities of plants that naturally growing under salt stress could contribute to antioxidant and anticancer properties. Therefore, compounds obtained through plants exhibiting high levels of PAL activities could be used in the development of new pharmaceuticals as an antioxidant and anticancer agent.

**Keywords:** antioxidant; antiproliferative; phenylalanine ammonia lyase (PAL); phenolic acid; salt stress



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