

**15<sup>th</sup> International Conference on ALTERNATIVE MEDICINE &  
12<sup>th</sup> World Congress on ENDOCRINOLOGY AND METABOLIC DISORDERS  
December 09-10, 2019 Bangkok, Thailand**

## **Variation of primary and secondary metabolites in naturally parthenocarpic and normal seeded fruits of newly grown line varieties of tomato**

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Naturally parthenocarpic tomato (NPT) and normal seeded (NST) varieties of tomato were collected from the experimental fields of Vegetable Research Department, Ayub Agricultural Research Institute (AARI), Faisalabad, Pakistan. The objective of this study is to estimate the physical parameters (fruit weight, fruit length, fruit width, shelf life of fruit, number of seeds per fruit, fruit shape), chemical composition (moisture, ash, crude fat, crude fibre, total carbohydrate and crude protein), of NPT and NST were analyzed. The methanolic extracts of tomato pulp were prepared by shaking and extracts were assayed for antioxidant activity and vitamin C estimation. Sugars contents and phenolic profile of NPT and NST were estimated by using HPLC. NPT fruits were low weight and small fruit size (length and width) than NST. Moreover, NPT fruit showed higher shelf life, seedlessness, change in fruit shape and high nutritional composition than NST. Total phenolic contents and total flavonoids contents of NPT were higher than total phenolic contents and total flavonoids contents of NST. Excellent DPPH free radical scavenging activities ( $IC_{50}$  22.56-40.23  $\mu\text{g/mL}$ ), ( $IC_{50}$  29.49-48.37  $\mu\text{g/mL}$ ) were observed with both NPT and NST extracts respectively. HPLC analysis also revealed the presence of the major phenolic acids chlorogenic acid, gallic acid, p-coumeric acid in NST and caffeic acid, gallic acid, p-coumeric acid in NPT. HPLC analysis showed that NPT contained high concentration of glucose, fructose and sucrose but low concentration of vitamin C as compared to NST. Statistical analysis revealed the significant variation in phenolic contents and antioxidant potential among both fruit varieties. This information can be used by nutritionists and food technologists to improve the nutrition of local people and develop food products that would be beneficial to human health.

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