



ASSESSMENT OF NUTRITIONAL QUALITY IN TOMATO (*SOLANUM LYCOPERSICUM* L.) AND CHERRY TOMATO (*SOLANUM LYCOPERSICUM* L. VAR. *CERASIFORME*) FRUITS

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ABSTRACT: *Solanum lycopersicum* L. is cosmopolitan in distribution and forms one of the major vegetable crops of the world. The species is rich in several potential nutraceuticals like flavonones, phenolics, amino acids, alkaloids, β carotene, ascorbic acid, lycopene and tocopherol. *Solanum lycopersicum* L. var. *cerasiforme* commonly called cherry tomato is proposed as the immediate ancestor of cultivated tomatoes. A comparative evaluation of the nutraceutical elements in both tomato and cherry tomato reveals that carbohydrates are higher in cherry tomato and among the analyzed amino acids, tyrosine shows the highest value in both followed by proline, cysteine, aspartic acid and serine. Phenyl alanine displayed the least value. β -Carotene and Vitamin C were higher in cherry tomato whereas lycopene and tocopherol were slightly higher in tomato. The phenolic and tannin contents were nearly double in cherry tomato compared to tomato. HPLC fractionation of phenolic acids revealed p-hydroxy benzoic acid, Caffeic acid, Gallic acid and Kaempferol in cherry tomato and in tomato along with other phenolics like Feruoylquinic acid, Rutin, Naringenin-O-hexocide 2 and Prunin. The phytic acid content was almost similar in both. Alkaloids were fractionated and quantified by HPLC and the content of alkaloids were higher for cherry tomato. FTIR spectroscopic analysis revealed various phytoconstituents based on functional groups of which the major ones were N₂ containing ones.

Key words: *Cherry tomato, lycopene, phytic acids, phenolics, HPLC, FTIR.*

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Wide variations are seen in wild relatives of cultivated plants and traditional local land races

with respect to their natural habitats and these resources in the biodiversity are still underexploited. Fundamentally, most of the cultivated plants are wild species. Solanaceae is one of the largest families with 90 genera which is cosmopolitan in distribution and has great relevance in agricultural sector all over the world. The family name is derived from the Latin word *solamen* which means quieting that refers to the sedative impacts attributed by most species on account of the presence of bitter alkaloids. The family is the source of more than 300 kinds of alkaloids¹. Some of the medicinally important alkaloids include solanine, scopolamine, atropine and hyoscyamine. Wide variety of secondary metabolites including tropane, pyridine, steroid alkaloids, withanolides, ecdysteroids, sesquiterpenes, diterpenes and anthraquinones are produced by Solanaceous plants². These compounds contribute to the defensive mechanisms of the plants

against herbivores, pathogens and also are allelopathic³. When we compare cultivated tomato (*Solanum lycopersicum*) with other *Solanum* relatives, cultivated tomatoes shows a large range of morphological diversity but low genetic diversity⁴. The expected ancestor of the domesticated form was *Solanum lycopersicum* var. *cerasiforme*. This is commonly called 'cherry tomato'. Wild and feral forms of *S. lycopersicum* var. *cerasiforme* can be found in its native Andean region and is also described as highly invasive⁵. Tomatoes (*Solanum lycopersicum*) are widely known for their antioxidant content, including high concentration of lycopene and excellent amounts of other conventional antioxidants like ascorbic acid and tocopherols, additional carotenoids (β -carotene, lutein, zeaxanthin), trace minerals (selenium, Cu, Mn and Zn) and phytonutrients including flavonoids (naringenin, rutin, kaempferol, and quercetin) and hydroxy cinnamic acids (caffeic, ferulic and coumaric acid⁶). Carotenoids are one among the most prominent phytochemicals in tomato, of which lycopene is the most abundant in the ripened fruit, accounting for approximately 80-90% of the total