

Title: Comparative assessment of fresh and processed tomato (*Solanum lycopersicum*) pulps: Impact of processing on physicochemical, antioxidant, and enzymatic behavior

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Abstract : This study investigated the impact of chemical and thermochemical treatment on the physicochemical, antioxidant, and enzymatic behavior of tomato pulp. The chemical treatment involved the use of 0.05 % potassium metabisulfite, 0.05 % sodium metabisulfite, 0.05 % potassium sorbate, 0.05 % sodium benzoate, 0.5 % ascorbic acid, and 1 % citric acid, whereas the thermochemical treatment involved heating the tomato pulp to 80–82 °C for 30 min before applying the same chemical preservatives, followed by storage at 30±1 °C for 120 days. The results revealed that the thermochemically treated sample retained higher levels of total phenol content (6.24–4.10 mgGAE/100 g), vitamin C (136.43–54.05mg/100 g), and a lower level of lycopene content (59.87–43.28µg/100 g) compared to chemically treated samples. Additionally, the thermochemically treated sample had higher TSS (6.57 to 6.70 °Brix), increased acidity (1.60 % to 1.06 %), lower pH (4.11–3.57), better color stability, and reduced browning. Moreover, it showed improved oxidoreductase and hydrolase enzymatic control during storage. Therefore, the idea of thermochemical treatment can be a milestone in improving the shelf life of tomato pulp to benefit the food industry

Key words: Tomato pulp Chemical treatment Thermal treatment Antioxidant Enzyme activity

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