

Preparation of Tomato Sauce from Tomato Powder Produced from Conventional and Microwave Vacuum Drying Methods

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This study was aimed to prepare tomato sauce using tomato powder produced by two drying methods; microwave vacuum and conventional drying. Ripen tomatoes of *Thilina* variety were washed, blanched for 1 minute by dipping in hot water at 60 °C and cut into 1 cm thick slices. The slices were dehydrated in conventional dryer and microwave vacuum dryer, ground and packed in sterilized, sealed glass bottles and stored in a cool dry place at room temperature. Tomato sauces were prepared from produced powders according to the Sri Lanka Standards (SLS) and their qualities were compared with three branded tomato sauces. Tomato powders and sauces were evaluated for physiochemical properties (color, pH, brix, titratable acidity, ascorbic acid content and viscosity), proximate composition, antioxidant properties [total phenolic content (TPC), total lycopene content and antioxidant activity] and microbiological qualities (total plate count, yeast and mould count and *E. coli* count). Changes in the quality of the powders and sauces were evaluated up to 5 months of storage at room temperature. Sensory evaluation was carried out using 5 points hedonic scale using 30 untrained panelists. Results of this study showed that physiochemical properties and proximate composition were satisfactory for both tomato powders and sauces during the study period. Lycopene content of sauces prepared from vacuum dried tomato powders (VTP) and conventional dried tomato powder (CTP) were 147.74±0.99 mg/kg and 125.97±0.57mg/kg, respectively, which were lower compared to that of branded sauces (brand 1 - 198.52±0.83 mg/kg). The highest TPC (32.8± 0.82 mg Gallic Acid Equivalent (GAE)/g) was obtained in the CTP among the powders, whereas, the highest TPC was obtained in brand 1 (77.66±0.82 mg GAE/g) among the sauce samples. Ascorbic acid content was higher (135.12±0.08 mg/100 g) in VTP compared to all the powder and sauce samples studied. Antioxidant activity was high in CTP (10.01±0.87 mg/mL) among all the tested samples. Better sensory acceptance was obtained in the sauces prepared from VTP than sauce prepared from CTP. All samples exhibited good microbial quality for 6 months of the study period, according to the SLS. Overall results revealed that microwave vacuum drying method is successful to preserve color and produce tomato powder with good physiochemical, antioxidant, and proximate properties.

Keywords: Conventional dryer, Dehydrated tomato powder, Microwave vacuum dryer, Tomato sauce