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Chemical and microbiological contaminants and preservatives in commercially available tomato sauces

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Tomato sauces are a part of the processed food industry which is currently amongst the fastest growing both for consumption and export making it a highly profitable industry. The present work was aimed to determine microbiological and some chemical parameters of commercially available tomato sauces.

The study was conducted with four (4) different brands of sauces and was compared with the limits stated in the Sri Lanka Standard 260 : 2008 (UDC 664.871.6 : 635.64). All tests were conducted according to the International Organization for Standardization (ISO) and Association of Official Analytical Chemists methods (AOAC). The parameters that were ascertained are benzoic acid and sulfur dioxide content used as preservatives, *E. coli*, the Howard Mold Count, and a trace metal analysis conducted for cadmium.

In this study three different batches from each brand was tested microbiologically and for heavy metals (one sample from each batch) whereas three different batches from each brand was analyzed in triplicate for preservatives (three samples from each batch).

The study showed the presence of sulphur dioxide in all four brands (2-52 mg/kg) which was less than the limit (100 mg/kg). Benzoic acid was also found in all four brands (40-357 mg/kg) with high variations which may be due to manufacturing inconsistencies and two brands from one batch exceeded the limit (250 mg/kg). In case where the samples exceeded the quoted limit a percentage of the total preservatives (sulphur dioxide and benzoic acid) was required to be calculated which should not exceed 100%. Results showed samples from one batch in one brand exceeded 100% whereas the other did not. The Howard mold count, *E. coli* and cadmium were absent in all four brands. Of the four brands tested, for three brands parameters tested conform to SLS specifications whereas for the other brand benzoic acid level from a sample from one batch did not conform to the limit specified by SLS standard. All different brands were compared with each other using the Null-Hypothesis, t-tests and f-tests for statistical analysis.

Keywords

tomato sauce, preservatives, cadmium, *E. coli*, Howard mold count

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Plumbagin functionalized silver nanoparticles for potential antimicrobial applications

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Plumbago indica L. called "Rathnitul" in Sinhala is a medicinal plant belonging to the family Plumbaginaceae that is extensively used in the traditional system of medicine in Sri Lanka. Plumbagin is a naturally occurring hydroxynaphthoquinone which is predominantly found in the roots of *Plumbago indica* L. Plumbagin has been proven to possess remarkable pharmacological properties which include antimicrobial, anticancer, anti-inflammatory, antioxidant, and antiparasitic properties. However, high volatility, poor oxidative stability, poor bioavailability, less target specificity and high toxicity of plumbagin have limited its use in therapeutic applications. In recent years, enormous attention has been drawn towards the functionalization of natural