



QUALITY AND ANTIOXIDANT EVALUATION OF TOMATO JUICE WITH PLANT EXTRACTS

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Abstract :The incorporation of mint (*Mentha piperita*) and thyme (*Thymus serpyllum*) extracts into tomato juice enhanced bioactive compound content and maintained product quality during storage. Among the tested variants, thyme extract provided the highest antioxidant stability and sensory acceptability, supporting its use in value-added functional tomato beverages.

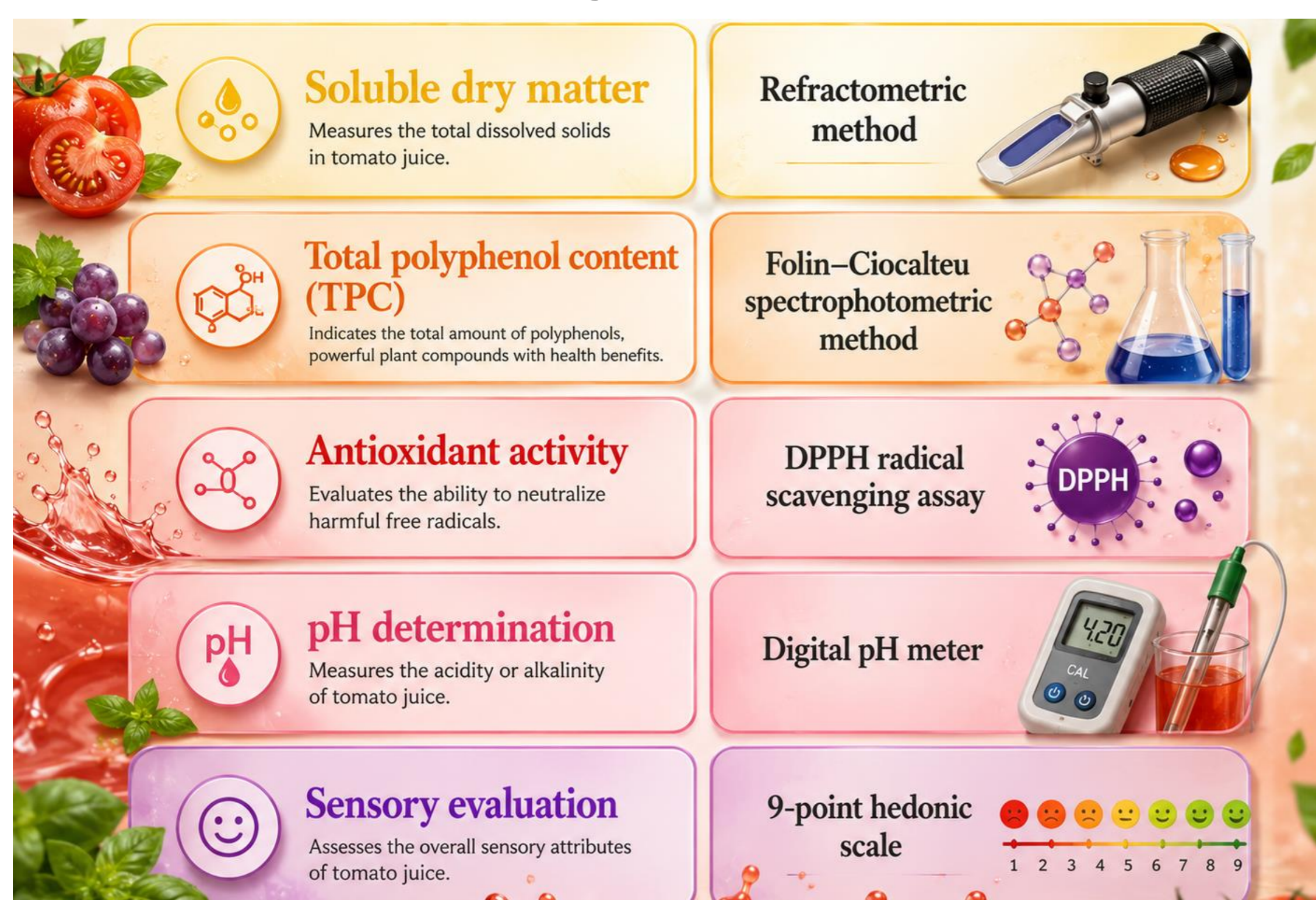
Introduction

Tomato juice is a valuable source of lycopene and polyphenols with important antioxidant properties. The incorporation of mint (*Mentha piperita*) and thyme (*Thymus serpyllum*) extracts represents a natural approach to improve the functional and sensory quality of tomato-based beverages.



Materials and methods

Tomato juice samples obtained from two commercial producers were enriched with mint (*Mentha piperita*) and thyme (*Thymus serpyllum*) extracts at different concentrations, resulting in ten experimental variants.



Result and discussion

The incorporation of mint and thyme extracts influenced the physicochemical, antioxidant, and sensory properties of tomato juice during storage. The main results obtained for soluble solids, total polyphenol content, antioxidant activity, pH stability, and sensory acceptability are summarized in the table below.

Parameter	Main Results	Best Performing Samples
Soluble solids	Slight increase during storage for all samples; control samples showed the highest values	T : 7.63% (21 days)
Total polyphenol content (TPC)	Extract-enriched samples showed significantly higher TPC than controls; gradual decrease during storage	FT2 : 87.40 → 78.00 mg GAE/100 mL
Antioxidant activity	Antioxidant capacity decreased during storage, but enriched samples showed better stability	TT2 : 45.96 → 40.54% DPPH inhibition
pH stability	All samples remained within acidic range (pH 3.2–3.6); thyme extract improved stability	FT2 : 3.41 → 3.39
Sensory analysis	Extract-enriched samples showed high consumer acceptability and improved sensory profile	TT1 : 8.68 / TT2 : 8.52

Conclusion

The enrichment of tomato juice with mint (*Mentha piperita*) and thyme (*Thymus serpyllum*) extracts improved its functional and sensory properties. Thyme-enriched samples, especially FT2 and TT2, showed the highest polyphenol content, better antioxidant stability, improved pH stability, and high sensory acceptability during storage. These results highlight the potential of aromatic plant extracts for the development of value-added functional tomato beverages.