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NUTRITIONAL PROFILE AND HEALTH PROPERTIES OF TURMERIC AND CURCUMIN EXTRACT: A COMPARATIVE ANALYSIS

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Abstract: The purpose of the study was to investigate the nutritional properties of turmeric and curcumin extract, as potential dietary supplements for poultry nutrition. The chromatographic analysis of vitamin E isomers revealed α -tocopherol of 1.97 mg/kg in turmeric vs 8.09 mg/kg in curcumin, γ -tocopherol of 3.01 mg/kg in turmeric vs 10.4 mg/kg in curcumin, and δ -tocopherol of 13.84 mg/kg, while in curcumin was not detected. The antioxidant yellow pigments lutein and zeaxanthin were in higher amounts in curcumin extract, which was also characterized by an increased concentration of total polyphenols (76.50 mg/g GAE). Turmeric had higher levels of flavonoids (47.42 mg/g vs 24.71 mg/g). The outcomes of this study can serve as a foundation for developing innovative food products by using poultry nutrition and harnessing the potential benefits of this ancient spice.

• Introduction

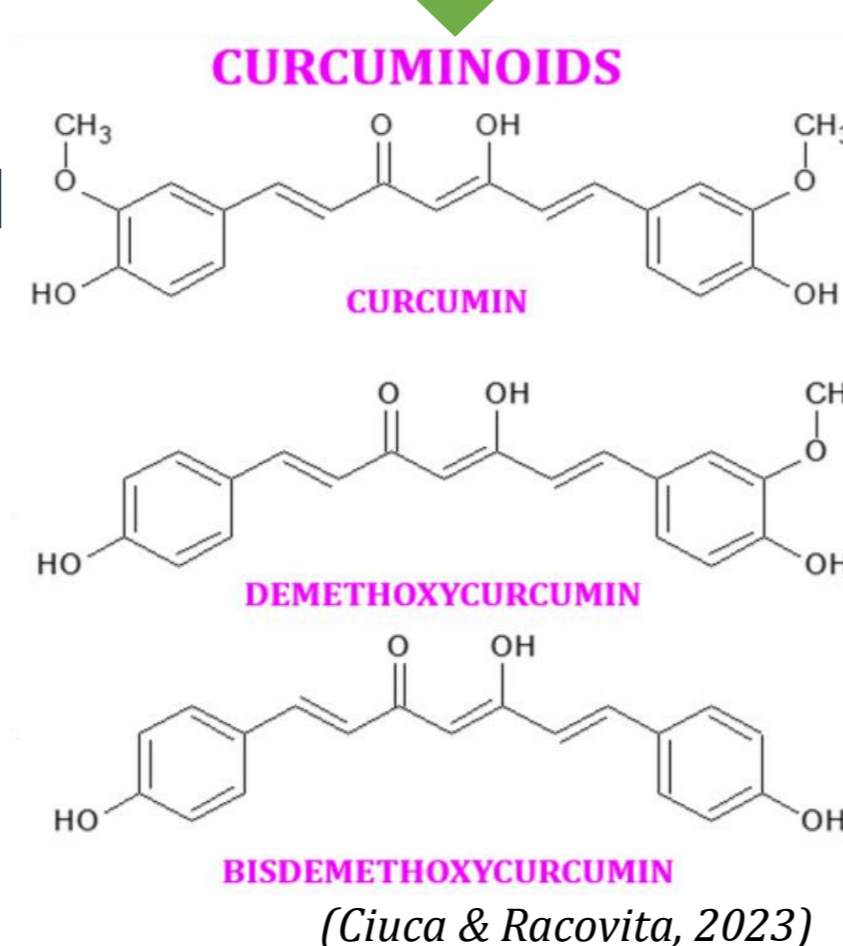
Curcuma longa L., popularly known as turmeric or golden spice, is a member of the Zingiberaceae family, and it is used as a condiment, preservative, flavoring, and coloring agent, as well as a traditional remedy for various diseases (Akter et al., 2019).

Turmeric is commercially available as a powder from the rhizome.



antioxidant, anti-inflammatory, antibacterial, antifungal, antidiabetic, insecticidal, and larvicidal effects

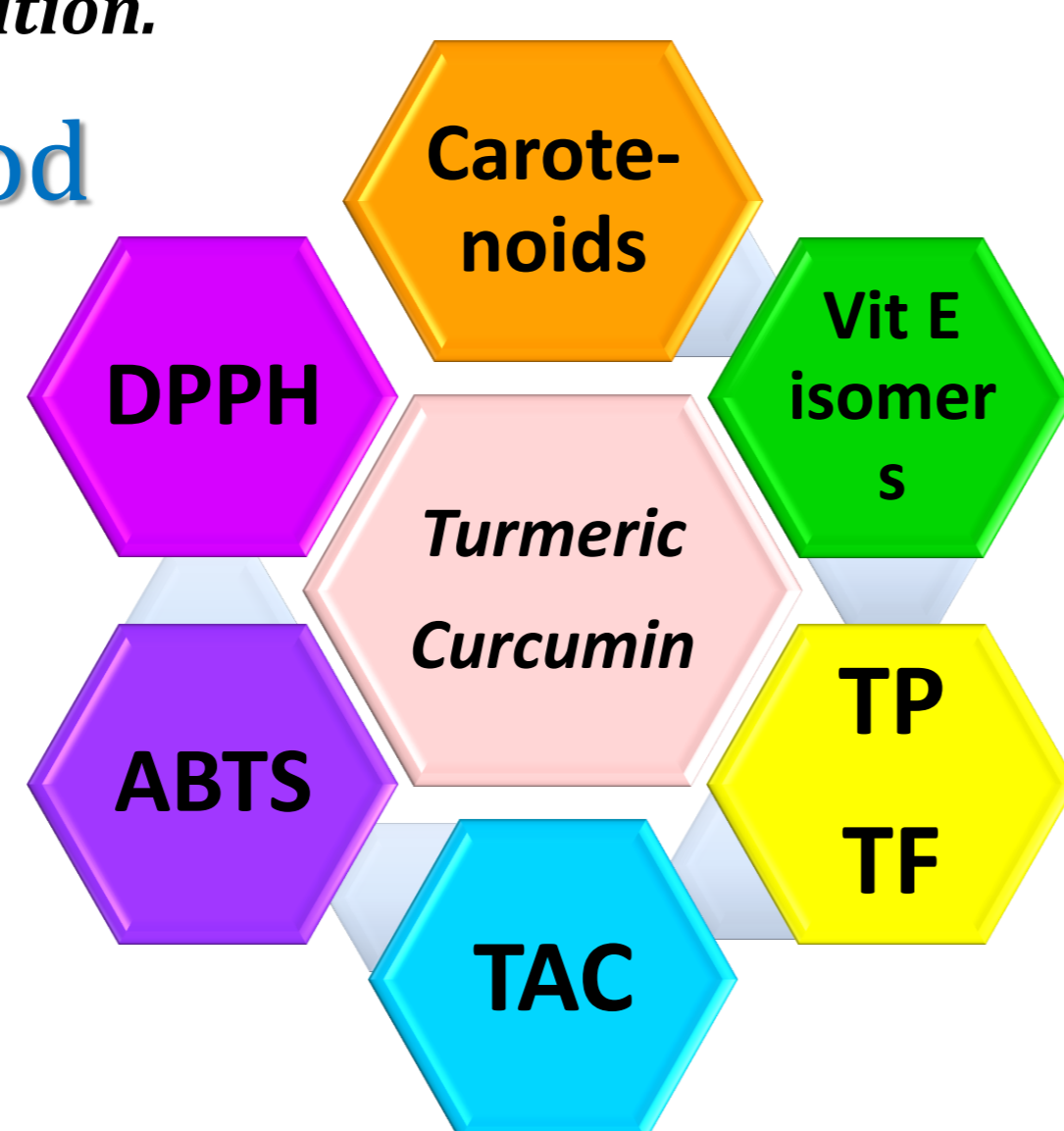
enhance digestive enzyme activities
improve liver function
reduce serum cholesterol levels
improve performance and egg quality



The present study aimed to conduct a comparative analysis of the nutritional profile and health properties of turmeric and curcumin extract, to evaluate their potential as dietary supplements for poultry nutrition.

• Material and method

- Turmeric and curcumin extract were purchased from a local store.
- Chromatographic and spectrophotometric methods were used for nutritional profile assessment.



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separations

Special Issue "Isolation and Identification of Biologically Active Natural Compounds" - Separations (impact factor 2.6)

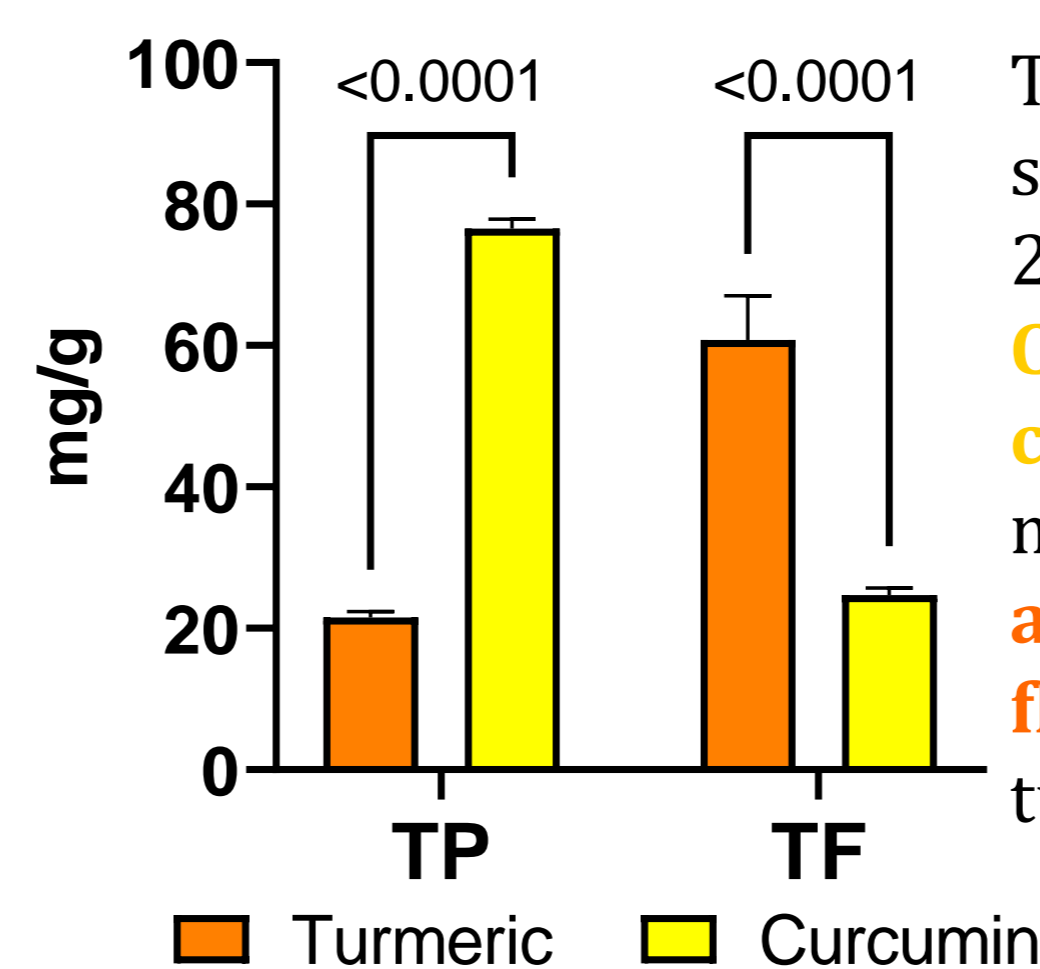


• Results and discussions

Turmeric powder had the highest ($p < 0.05$) concentrations for ABTS, DPPH, and total antioxidant capacity.

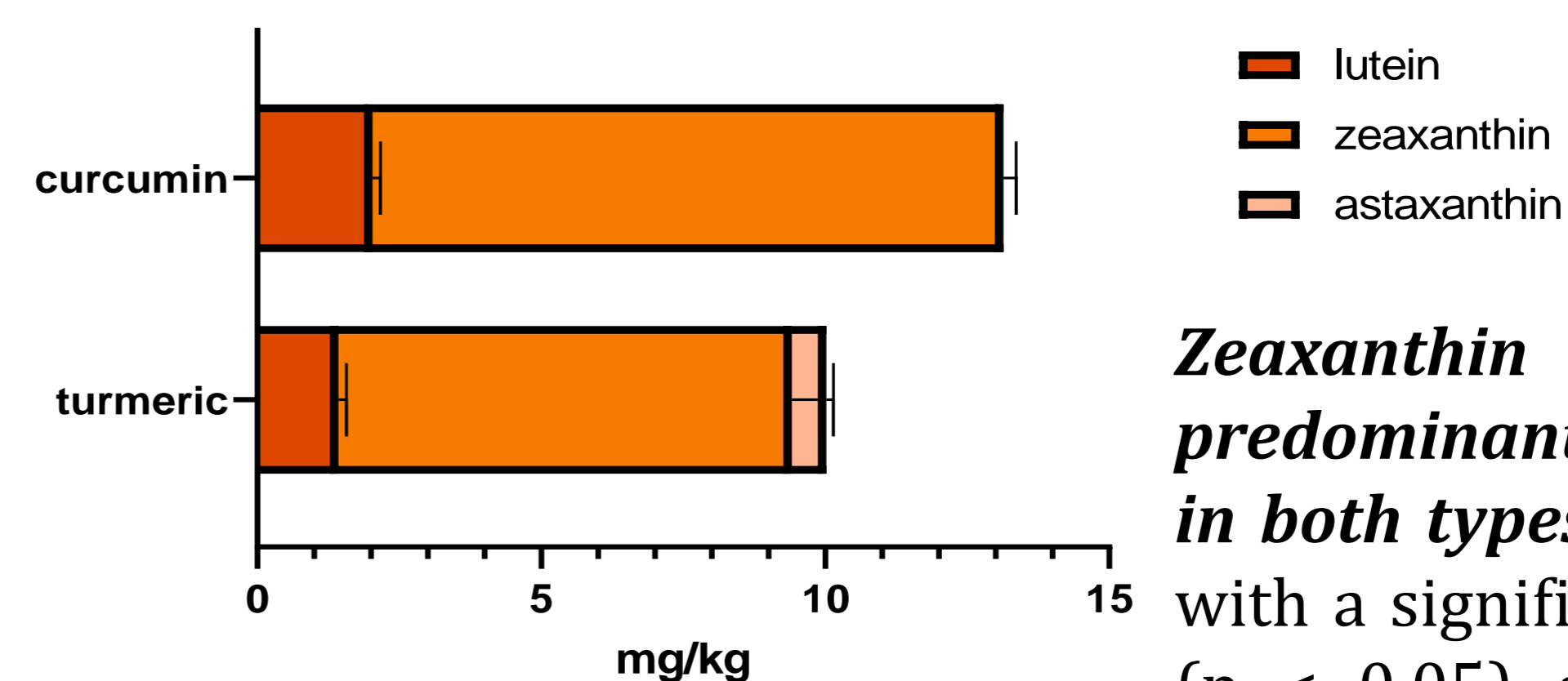
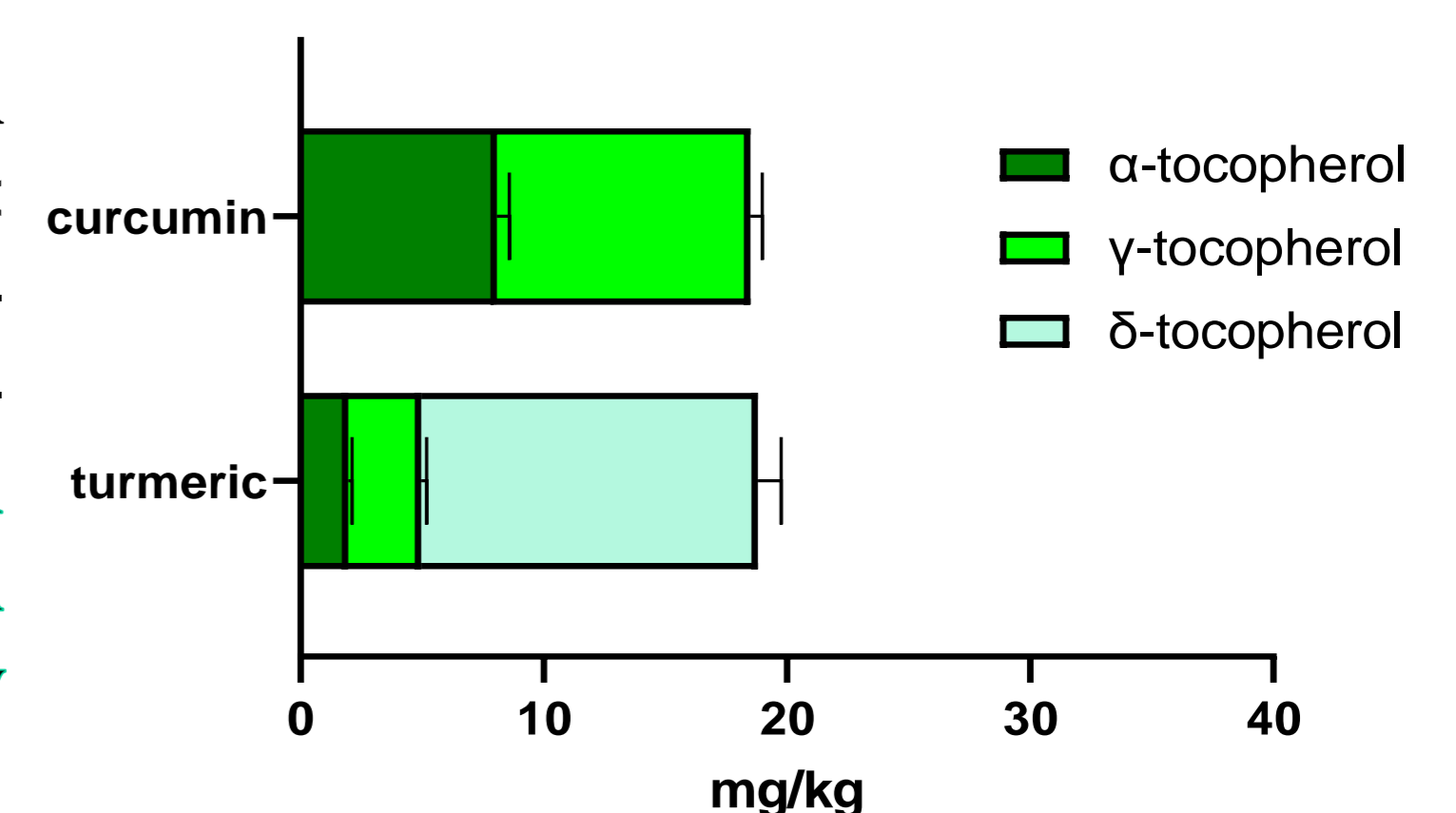
Table 1. Antioxidant capacity of turmeric and curcumin powders

Item	Turmeric	Curcumin	SEM	p-Value
Iron chelation	1.31 a	6.46 b	1.15	<0.0001
ABTS	320.5 b	71.21 a	55.76	<0.0001
TAC	198.8 b	99.71 a	22.41	0.0001
DPPH	60.81 a	47.89 a	4.16	0.126



The rhizomes of *C. longa* serve as a rich source of phytochemicals, containing 21.54 mg/g GAE total polyphenols (TP). Curcumin extract registered a higher content of total polyphenols (76.50 mg/g GAE), while turmeric powder had an increased concentration of total flavonoids (TF) (47.42 mg/g flavonoids in turmeric vs 24.71 mg/g in curcumin).

Curcumin had a significantly higher ($p < 0.05$) concentration of α -tocopherol and γ -tocopherol. δ -tocopherol was present in a significant amount only in the turmeric powder.



Zeaxanthin was the predominant carotenoid in both types of samples, with a significantly higher ($p < 0.05$) concentration in the curcumin extract.

• Conclusions

The results of this study showed the **comprehensive antioxidant activity of turmeric and curcumin extract**, based on the complex antioxidant profile (liposoluble and watersoluble antioxidants), free radicals' scavenging (ABTS and DPPH), metal-chelating activity, and antioxidant capacity.