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IMPROVING THE ANTIOXIDANT PROPERTIES OF SESAME OIL THROUGH THE ADDITION OF NATURAL BIOACTIVE COMPOUNDS

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Abstract: Sesame (*Sesamum indicum* L.) is a valuable oilseed crop that contains several nutritious bioactive compounds. Sesame seeds have a high oil content (50-60%). They are rich in high quality unsaturated fatty acids. The purpose of this research was to determine the quality of the flavoured sesame oil obtained by the addition of vegetable spices to sesame oil (basil - *Ocimum basilicum*, garlic - *Allium sativum*, cumin - *Cuminum cyminum* and cinnamon - *Cinnamomum zeylanicum*). The addition of garlic, cumin, cinnamon or basil to sesame oil can provide additional benefits. Garlic is well known for its anti-microbial and anti-oxidant properties. Cumin can help with digestion and may also have anti-inflammatory properties. Cinnamon may have antimicrobial and antioxidant properties and may help control blood sugar levels. Basil is known to have anti-inflammatory, antioxidant and anti-microbial properties. All these spices improve the quality of the oil through the addition of natural bioactive compounds.

• Introduction

Sesame seeds contain phenolic compounds such as sesamin and sesamol, which have been reported to be valuable compounds for human health. Sesame oil is obtained by cold pressing. Sesame oil has never been used as an edible oil.

• Material and method

The following determinations were carried out: total antioxidant capacity (TAC) by FRAP assay, total polyphenolic compound content (TP) by the Folin-Ciocalteu method and vitamin C by titration with 2,6-dichlorophenolindophenol sodium. The aromatic plants (1g) and the sesame oil (10 g) are placed in dark bottles. During 21 days of maceration at room temperature (20°C), the oil samples were filtered and chemically analysed. A control sesame oil (C) and a oil sample with basil (FSO1), garlic (FSO2), cumin (FSO3) and cinnamon (FSO4) were prepared.

• Results and discussions

Bioactive compounds in fresh (basil, garlic) and dried (cumin, cinnamon) aromatic plants and flavoured sesame oil were studied.

Table 1. The total antioxidant compounds, the total polyphenolic compounds and vitamin C of flavoured sesame oil

Antioxidants compounds	C	FSO1	FSO2	FSO3	FSO4
TAC (mM Fe ²⁺ /g)	500	1200	1244	810	1100
TP (mg GAE/g)	105.9	98.8	102.4	103.4	120.7
Vitamin C (mg/100 g)	-	21	16.8	20.2	2.5

• Conclusions

The highest amount of total polyphenols was found in the oil samples flavoured with cinnamon. The highest antioxidant capacity was found in sesame oil samples flavoured with garlic.