

**AROMA DETERMINATION OF A REFINED SUNFLOWER SEED OIL BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY USING DIFFERENT EXTRACTION METHODS**

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**ABSTRACT**

The sunflower (*Helianthus annuus* L.) seeds are eaten raw, roasted, cooked, dried, and ground, and used as a source of oil. Edible vegetable oils are important to our daily life by providing energies, nutritional compounds, and desirable flavors. Sunflower seeds are usually processed in large oil mills using solvent to extract oil and refining it. Three typologies of sunflower oil, characterized by diverse percentage of oleic acid are present on the market: a low, mid and high oleic sunflower oil. Refined sunflower oil, especially high-oleic, is very versatile and due to its neutral flavour and heat stability it can be consumed in many ways in the kitchen, such as frying and cooking. Edible oils play a significant role in the food industry due to both their functional and nutritional features and their impact on taste, aroma and health. Aroma is a main quality factor for edible vegetable oils as a characteristic parameter. Many extraction techniques have been carried out to extract the aroma compounds of oil. Therefore, in this study, aroma compounds of a refined sunflower oil obtained from a local market in Adana was extracted by different isolation methods including solid phase extraction (SPE), simultaneous distillation extraction (SDE) and purge and trap extraction (PTE). Afterwards, aroma compounds of the extracts were identified and quantified by gas chromatography (GC) coupled with a mass spectrometry (MS) and flame ionization detector (FID). Among the extraction methods, the PTE was quantitatively and qualitatively detected as the most suitable method for the extraction of aroma compounds in the studied sample.

**Keywords:** Refined sunflower oil, aroma profile, extraction techniques, GC-MS