

# Determination of Copper in Olive Oil by Flame Atomic Absorption Spectrometer with N,N'-bis(5-methoxy-salicylidene)-2-hydroxy-1,3-Propanediamine

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The catalytic effects of transition metals on the oxidative stability of oils are well known. Thus, the importance of metal determination in oils has increased. This work aims to develop an analytical method for the determination of copper with a proper ligand. Complexation properties of N,N'-bis(5-methoxy-salicylidene)-2-hydroxy-1,3-propanediamine (5MSHP) with copper in ethanol-water medium have been studied spectrophotometrically. Appropriate pH, complex formation time, and metal/ligand ratio have been determined. The proposed procedure is based on efficient extraction of copper from oil to aqueous solution. The temperature, the ligand solution's volume-to-oil mass ratio, and the stirring time are effective on the complex formation and extraction efficiency. A central composite design has been employed in order to optimize the extraction conditions of copper from oil for further determination by FAAS. Optimum extraction conditions were found to be 26.7 °C, 1.3 mL g<sup>-1</sup>, 5.6 minutes. Copper contents of the extracts have been determined by FAAS. The proposed method has been evaluated by using oil based metal standards, obtaining satisfactory results. The limit of detection (LOD) and the relative standard deviation of the method were found to be 0.06 µg g<sup>-1</sup> and 2.31 % respectively. The method has been successfully applied to the analysis of olive oil. The present work describes a simple, accurate, sensitive, efficient, economic and rapid alternative analytical method for the copper determination in olive oil.

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