

**Title:** Development of an HPLC with amperometric detection method using screen-printed electrodes for the determination of polyphenols in the characterization of natural products.

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Nowadays, there is a great interest in the control of quality and the different properties of consumer products available for the whole society. Consumer preferences are based on organoleptic properties (sensory impression of the products), on healthy properties and on socioeconomic reasons. Specifically, polyphenols, among others, are responsible of some beneficial properties present in consumer products due to their antioxidant character. In addition, they also contribute to the sensory aspects. The concentration of polyphenols in a particular natural food is influenced by various factors such as the geographical area where the product is produced, the different varieties employed or the way it is grown. In our case, we will study samples of paprika cultivated in two different geographical areas and obtained from three different varieties of peppers.

In this work, the characterization and classification of different Spanish paprika samples with product denomination of origin (PDO) were carried out with the help of chemometric tools and using a separation method that was previously developed in the research group for the analysis of polyphenols. The separation method was based on high performance liquid chromatography (HPLC) with UV-Vis detection and amperometric detection using different screen-printed electrodes. Chromatographic separation was performed on a C18 reversed-phase column under gradient elution using acidic water (0.1% formic acid) and methanol as mobile phase.

With this purpose, the polyphenols extraction method from paprika samples as well as the conditions for the amperometric detection (the selection of optimum material of the working electrode and the applied potential) have been optimized, and the classification of samples attempted by principal components analysis (PCA).

**Keywords:** High Performance Liquid Chromatography (HPLC), Amperometric Detection, UV-Vis Detection, Screen-printed electrodes, Polyphenols, Natural food products, Paprika.