

THIN-LAYER CHROMATOGRAPHY OF LIPID FRACTION IN TREE NUTS SPECIES

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Nuts are defined as a “super food”. This definition responds in first term at high caloric content of nuts and in second term at its composition in proteins, fats and carbohydrates¹. Recently nuts have acquired a great notoriety among nutrition specialists due to this composition, specifically in fats and another components (Antioxidants, etc...). Nuts are seeds with a high portion of fats. The degree of saturation of fatty acid constituents of triacylglycerols is near to ideal intake in humans according to nutrition specialist. In addition, other components of lipid fraction in nuts (Phytosterols, lipophilic Vitamins, etc...) are also important in human wellness².

In this study, we apply thin layer chromatography (TLC) and high precision thin layer chromatography (HPTLC) techniques to improve separation, identification and quantification of lipid constituents in six different species of nuts (Hazelnut, Almond, Walnut, Peanut, Pistachio and Cashew nut). After lipid extraction³ and using different solvents, plates, conditions of chromatography and methods of revelation we tried to optimize TLC and HPTLC methods to analyze the fat fraction of these seeds. We start with a first plate of simple lipids separation in a Silica G plate with hexane, glacial acetic acid and tert-butyl methyl oxide (70:30:2) as a first solvent, and hexane as a second solvent for a following migration.. Posterior solvents and conditions has been applied to separate each

¹ Composition of nuts provided by USDA food database.

² Berry EM, Eisenberg S, Effects of diets rich in monounsaturated fatty acids on plasma lipoproteins-the Jerusalem nutrition study: high MUFAs vs high PUFAs. *Am J Clin Nutr* 1991; 53: 899-907.
St-Onge, MP. Dietary fats, teas, dairy, and nuts: potential functional foods for weight control? *Am J Clin Nutr* 2005;81:7-15.

³ Method of Folch devised by Nichols published in “Lipid Analysis” William W. Christie The Oily Press.

one of the lipid component⁴. Comparisons with Gas chromatography techniques allow us improve TLC and HPTLC methods for lipid analysis. Comparative analysis of lipid constituents in tree nuts species are discussed.

⁴ Joseph C. Touchstone, Thin- layer chromatographic procedures for lipid separation. J. of Chromatography B