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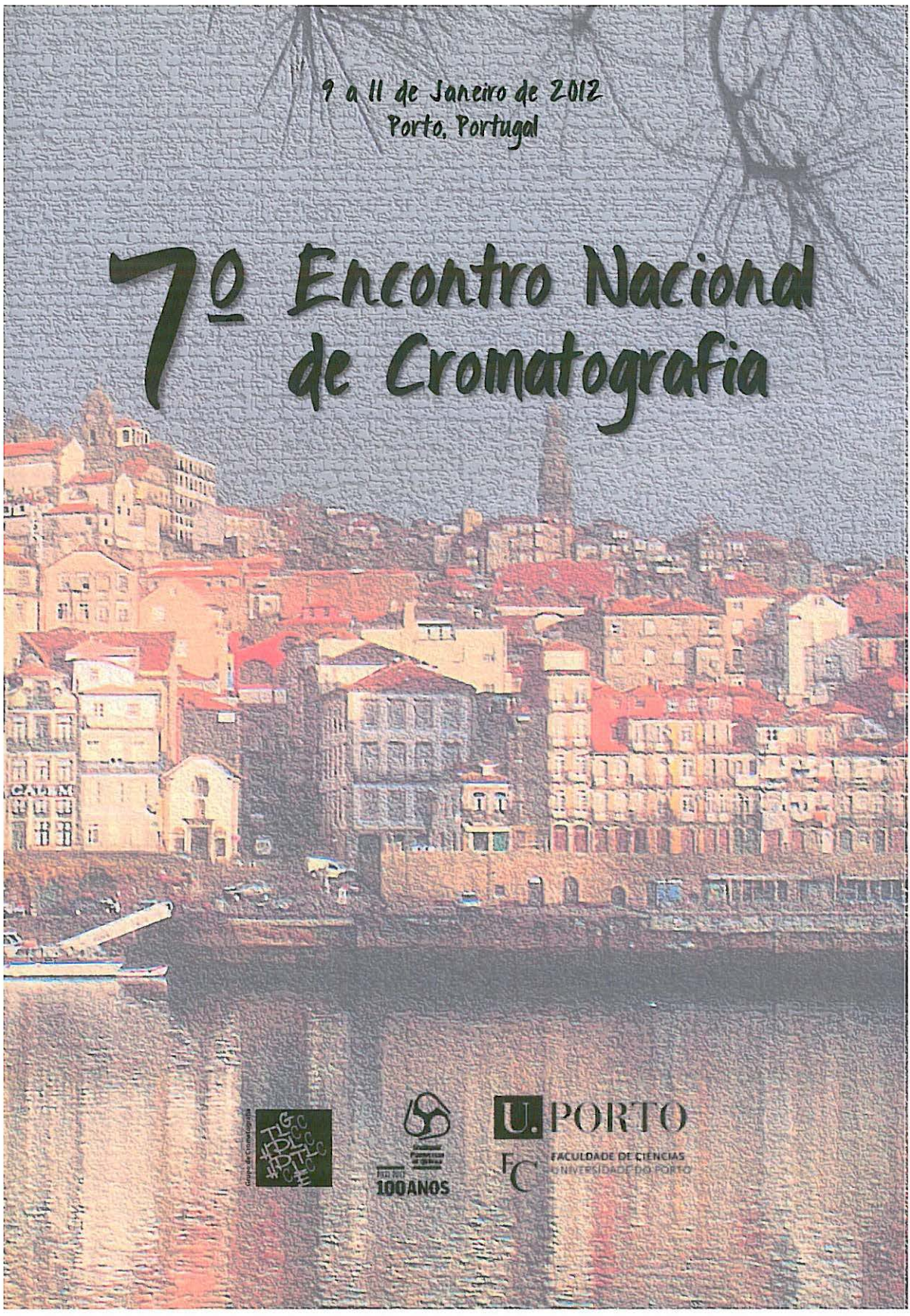

Grupo de Cromatografia

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CO14. Fatty acids profiles as a tool to distinguish γ-irradiated food products: a transnational study based on *Castanea sativa* fruits

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Chestnut (*Castanea sativa*) is an important food resource in several countries. Portugal and Turkey are among the major European producers. Due to the high value of chestnuts, there is a need for conservation methodologies that allow the complete maintenance of their properties. Food irradiation is a possible alternative to substitute the traditional quarantine chemical fumigation treatment [1,2]. The fatty acid (FA) composition of chestnuts is important from several perspectives, including (1) nutritional quality; (2) possible health benefits offered by monounsaturated fatty acids (MUFA) and polyunsaturated fatty acids (PUFA); (3) desirable flavors are often attributed to several FA; (4) contribution to texture; and (5) importance in keeping quality (shelf life). Therefore, in addition to their health effects, fatty acids play an important role in chestnut conservation quality. These lipidic compounds might be affected by the applied irradiation dose; otherwise, the dose must be high enough to assure the elimination of the biological risks. Hence, it is primarily essential to define the threshold values that prevent the development of undesirable physico-chemical changes.

Herein, the influence of gamma irradiation dose (0.50 and 3.00 kGy) over the FA profiles of Portuguese and Turkish chestnuts was evaluated by gas-chromatography coupled to flame ionization detection. Chestnuts from both countries revealed an identical profile, comprising C8:0, C12:0, C14:0, C16:0, C16:1, C17:0, C18:0, C18:1n9, C18:2n6, C18:3n3, C20:0, C20:1n11, C20:2n11, C20:3n3+C21:0, C22:0 and C24:0 (C15:0 was only found in Portuguese cultivars). Overall, the tested doses did not affect greatly the FA profiles. Nevertheless, some particular differences regarding individual FA were detected allowing a better comprehension about the chemical interactions induced by irradiation treatment.

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[2] Fernandes A, Antonio AL, Barros L, Barreira JCM, Bento A, Botelho ML, Ferreira ICFR, J. Agric. Food Chem. 2011, 59, 10028-10033.

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