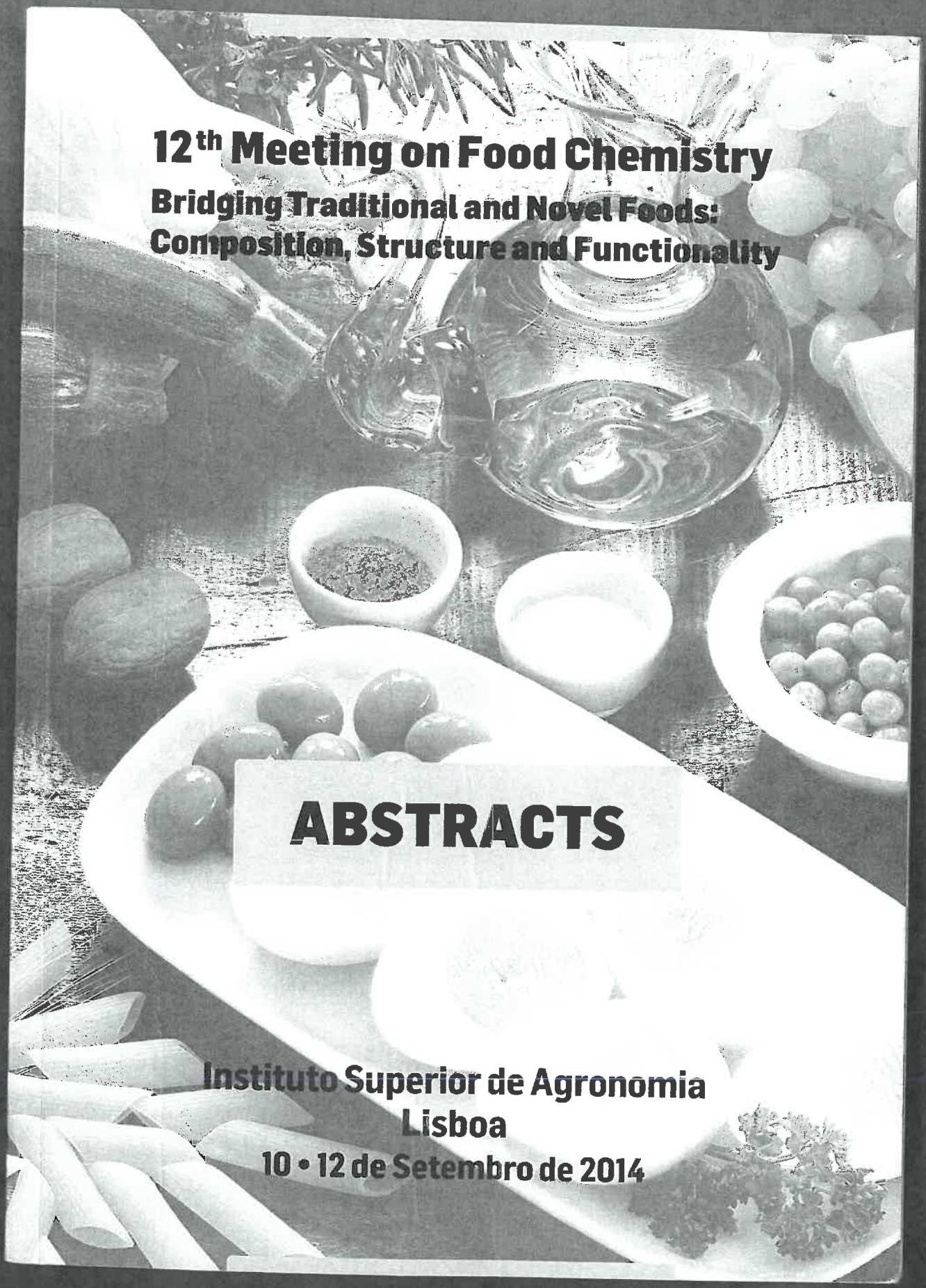

12th Meeting on Food Chemistry

Bridging Traditional and Novel Foods: Composition, Structure and Functionality

ABSTRACTS

Instituto Superior de Agronomia
Lisboa
10 • 12 de Setembro de 2014

12º Encontro de Química dos Alimentos

Composição Química, Estrutura e Funcionalidade: A Ponte Entre Alimentos Novos e Tradicionais

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Abstracts

Sociedade Portuguesa de Química
Divisão de Química Alimentar

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S4-PP18

Hypericum species identification to assess the authenticity of plant food supplements

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In the last years, medicinal plants and derived products have become increasingly available in the EU market as ingredients of formulations sold as food supplements. This type of products is legally considered as foods under the Directive 2002/46/EC [1], thus with legal responsibility of its safety relying on business operators as they are not under the control of the European Medicines Agency (EMA). Among the several issues that may affect the safety of plant food supplements (PFS), adulterations and the swap/misidentification of plant material should be considered as a possible public health problem, with cases of acute toxicity caused by the misclassification of plants already been reported. In Portugal, two *Hypericum* species are widely used for their medicinal properties, being also included as ingredients in PFS. However, they are used for distinct health purposes with *H. perforatum* (also known as St. John's wort) being used in several PFS for its anti-depressive and anxiolytic properties, while *H. androsaemum* (also known as Hipericão do Gerês) is mainly used as a cholagogue and hepatic protector. Owing to their similarity and distinct therapeutic use, accurate and fast methodologies that allow their distinction are required. To date, most methodologies used for the identification of plant species rely mainly on microscopic or chromatographic analysis. However, microscopy is not suited for extracts and powdered plants, while chemical composition is known to vary widely, being affected by factors such as region and climate [2]. By the contrary, DNA-based methods allow for the unequivocal species identification, making this a suitable option for the authentication of medicinal plants and products thereof.
The aim of this work consisted on the use of DNA-markers for the unequivocal identification of *Hypericum* species used in PFS. For this purpose, a previously developed methodology based on DNA barcoding coupled to high resolution melting (HRM) analysis for *Hypericum* species discrimination (*H. perforatum* and *H. androsaemum*) was used [3]. A total of 15 PFS samples including capsules, tablets and solutions, all labeled as containing *Hypericum* species in their composition were analyzed. DNA of PFS samples and plant materials was extracted using an adaptation of the in-house developed CTAB method (lysis buffer with PVP and β-mercaptoetanol) [4]. DNA of several other medicinal plants was extracted to evaluate the assay specificity. Yield and purity of extracts were assessed by UV spectrophotometry using a micro-volume plate accessory. All the extracts were amplified by end-point polymerase chain reaction (PCR) targeting the *matK* locus, followed by real-time PCR using EvaGreen dye coupled by HRM analysis. In addition to PFS samples, the viability of detecting *Hypericum* DNA in plant aqueous and hydroalcoholic extracts was also evaluated by using extracts and tinctures prepared in the laboratory with known amounts of *Hypericum* plants.

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