

PROGRAM & BOOK OF ABSTRACTS

Assuring the integrity of the food chain: FIGHTING FOOD FRAUD

April 6-7, 2016
Prague, Czech Republic

Jana Pulkrabová, Monika Tomaniová, Jana Hajšlová and Paul Brereton
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Assuring the integrity of the food chain: **FIGHTING FOOD FRAUD**

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Ensuring the Integrity of the European food chain (FoodIntegrity)



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POSTER SESSION

WEDNESDAY - THURSDAY, April 6-7, 2016

13:00-14:30 **POSTER SESSION (Wednesday, April 6, 2016)**

Posters are displayed during the whole conference.

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- P3** ADVANCES IN TOOLS TO SUPPORT FOOD FRAUD VULNERABILITY ASSESSMENT AND RISK MITIGATION
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- P7** ARE THEY AT RISK AND DO THEY KNOW? FOOD SAFETY KNOWLEDGE OF POULTRY MEAT CONSUMERS IN SLOVENIA
Sonja Smole Možina, Meta Sterniša, Špela Zorko, Sonja Levstek, Andreja Kukec, Mojca Jevšnik, Peter Raspor
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- P10** REAL-TIME PCR FOR SALMON IDENTIFICATION
Amanda Naaum, Robert Hanner
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P38 HIGH RESOLUTION MELTING ANALYSIS AS A NEW TOOL TO AUTHENTICATE PLANT FOOD SUPPLEMENTS: THE CASE OF ARTICHOKE (*CYNARA SCOLYMUS*)

Andreia Batista¹, Joana Costa², Telmo J.R. Fernandes³, Joana S. Amaral⁴, M. Beatriz P.P. Oliveira⁵, Isabel Mafra^{6*}

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Artichoke (*Cynara scolymus* L.) is a medicinal plant mainly used for its antioxidant, diuretic, choleric and hepatoprotective properties, being frequently included in herbal infusions and plant food supplements (PFS) marketed for weight-loss (Lattanzio et al, 2009). Both types of products can be adulteration targets, either by the deliberate substitution of other lower-cost plant species, or by the accidental swap of plants owing to misidentification. Therefore, to ensure consumer's safety, analytical methods for plant species identification in complex matrices are crucial. For this purpose, DNA-based methods have been reported as the most adequate tools for plant authentication. Genetic composition of each plant is unique and independent from the part of the plant used (Kazi et al., 2013). Moreover DNA molecules are very stable, not affected by the plant's age, physical conditions or environmental factors, in opposition to chemical markers. In this work, a molecular approach based on real-time PCR coupled to high resolution melting (HRM) analysis to discriminate *C. scolymus* from other *Cynara* species was developed and applied to the analysis of herbal mixtures and PFS labelled as containing artichoke as ingredient. For this purpose, different *Cynara* voucher species (*C. scolymus*, *C. cardunculus*, *C. humilis* and *C. syriaca*) were obtained from germplasm banks, while samples of herbal infusions (6) and PFS (8) were acquired at local herbal and dietetic stores. DNA from plant material and PFS was extracted using the commercial NucleoSpin Plant II kit. For *Cynara* spp. differentiation, new primers were designed on a microsatellite region of *C. cardunculus* (GenBank EU744973.1) for the development of qualitative polymerase chain reaction (PCR) and real-time PCR assays. Prior to the specific PCR assays, DNA extracts were positively tested targeting a universal eukaryotic sequence (18S rRNA gene). The qualitative PCR results were specific for *Cynara* genus. Further development of real-time PCR coupled to HRM analysis showed that the tested *Cynara* spp. were grouped in three distinct clusters with a level of confidence above 99.4%, thus enabling the discrimination of *C. scolymus* from the others. The analysis of commercial samples showed that, with the exception of one PFS sample, all samples were positive for the presence of the universal eukaryotic gene. All herbal infusions and three PFS were positive for the presence of *Cynara* spp. based on the qualitative PCR assay. The application of the proposed method of HRM analysis confirmed the unequivocal presence of *C. scolymus* with high level of confidence (>98.8%) in the tested samples. To our knowledge, this is the first successful attempt for the rapid discrimination of *C. scolymus* in PFS.

Lattanzio V., Kroon P.A., Linsalata V., Cardinali A. Journal of Functional Foods 2009, 1, 131-144.

Kazi T., Hussain N., Bremner P., Slater A., Howard C. Fitoterapia 2013, 87, 27-30.

Keywords: *Cynara* spp., artichoke, authenticity, DNA-based methods, plant food supplements

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