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# 12th European Nutrition Conference (FENS)

Berlin, Germany, October 20–23, 2015

## Abstracts

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## **EDITORS ABSTRACT**

Every four years, the Federation of the European Nutrition societies (FENS) organizes a scientific conference that brings together European and Pan-European experts to discuss most recent scientific developments in the food, diet and health arena. The 12th FENS conference took place in Berlin, October 20 to 23, 2015, under the hospice of the German Nutrition Society with the motto “Nutrition and Health during life cycle – science for the European consumer”. Sessions were dedicated to latest research and outcomes of studies on the impact of diet into body functions, on dietary intake and dietary status of the population and of specific groups as well on the role of diets in disease occurrence and prevention. Translational research addressed strategies and approaches to change dietary behavior and policy measures. Four plenary sessions framed the program with distinguished speakers covering health aspects in the life cycle but also the global dimension of food security.

The present supplement comprises the 950 submitted abstracts and additional 320 abstracts of invited and selected speakers. The abstracts are ordered according to the scientific sessions of the conference, and the industry sponsored satellite activities, and posters. Within the program up to eight scientific sessions were held in parallel with thematic areas of (1) Food and nutrient intake, dietary patterns, dietary guidelines, (2) Advances in dietary studies, methodology and design, (3) Metabolic diversity, (4) Nutrition, public health, chronic diseases, and (5) Food quality, food safety, sustainability, consumer, behavior and policy.

The supplement can be searched with pdf-tools by using keywords such as authors, topics, specific compounds, etc.

Keywords: Nutrition, Nutrition policy, FENS, German Nutrition Society

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as they are produced without agrochemicals. Strict restriction in organic regulation related to post-harvest treatments can pose question about food safety. Use of natural compounds in active packaging is a smart solution to deliver fresh and safe product to the consumer as it helps to improve food safety, maintain quality and prolong shelf-life.

**Objectives:** Aim of this study is to evaluate effect of natural antimicrobials on quality and safety of organic spinach packed in biodegradable film.

**Method / Design:** Antimicrobial activity of eugenol, carvacrol, trans-cinnamaldehyde, trans-anethole was tested in in-vitro study against storage rot (*Pectobacterium carotovorum*) and human pathogens (*Escherichia coli*, *Salmonella enterica*). Sachets with different active compounds were inserted into biodegradable packages of organic spinach and stored in cooling chambers. Chemical and physical analysis were carried to evaluate effectiveness of the treatments on quality of the product after storage. Sensory panel was performed in order to evaluate visual, odor and texture attributes.

**Results:** Antimicrobial effect on *Pectobacterium carotovorum* had higher efficacy in comparison to *Escherichia coli* and *Salmonella enterica*. However antimicrobial activity of tested natural compounds is comparable to activity of antibiotics commonly used during disease treatments. Addition of antimicrobial sachets had positive effect on many factors related to quality of the product, however off-odor related to plant extract was slightly dominant.

**Conclusions:** The study showed that natural antimicrobials can maintain quality of packaged organic spinach and providing safety for consumers, however natural antimicrobial compounds are strongly aromatic and method need to be optimized before it can be implemented on the market.

**Keywords: (maximum 5):** carvacrol, eugenol, anethole, organic leafy greens, antimicrobial sachets, biodegradable packaging

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## 149/1294. Antioxidant capacity of cocoa products from Serbia market

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**Introduction:** Cocoa is gaining importance as a source of biologically active substances. Cocoa flavonoids have received considerable attention because of their physiological functions including antioxidant, antimicrobial, antimutagenic and anti-inflammatory activities.

**Objectives:** The aim of this study was to evaluate the correlation of declared cocoa content with the antioxidant activity of analyzed cocoa products.

**Objectives:** The aim of this study was to evaluate the correlation of declared cocoa content with the antioxidant activity of analyzed cocoa products.

**Method / Design:** Different kinds of cocoa products from Serbia market were analyzed regarding total polyphenol, flavonoid and proanthocyanidin content using spectrophotometric methods. DPPH, FRAP, ABTS and ORAC assays were applied for measuring antioxidant capacity. The average of all four antioxidant tests for each cocoa product was used for calculating antioxidant potency composite index (ACI).

**Results:** The total polyphenol and flavonoid content was the highest in cocoa powder samples (35.35 mg GAE/g and 63.3  $\mu\text{mol CE/g}$ , respectively). The content of flavonoids followed the content of total polyphenols in all samples. Total polyphenol content was 3 and 13 times lower in dark and milk chocolates than in cocoa powders and this decrease did not follow declared cocoa content in products. The content of proanthocyanidins in chocolate/cocoa extracts varied between 0.69 mg CyE/g in milk chocolates and 7.07 mg CyE/g in cocoa powders. Cocoa powders had average ACI value of 88.3%, dark chocolates 29.1%, while average ACI value for milk chocolates was only 7.3%.

**Conclusions:** Obtained results for all four assays have shown that antioxidant capacity of analyzed chocolate/cocoa extracts followed cocoa, polyphenol, flavonoid, and proanthocyanidin contents. In addition, correlation between antioxidant potency composite index and declared percentage of cocoa was high ( $R^2=0.798$ ,  $p<0.05$ ) and indicated that declared cocoa content was a reliable indication for antioxidant capacity of chocolates produced in Serbia.

**Keywords: (maximum 5):** chocolate, DPPH, FRAP, ABTS, ORAC

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## 149/1305. Development of functional products with dried micro-algae: consumer acceptance and nutritional benefits

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**Introduction:** Micro-algae are increasingly recognized in Europe for their high potential as an alternative source of nutrients for humans and animals. In addition to proteins, micro-algae contain a wide variety of micro-nutrients and bioactives of interest in nutrition and health. Research and product development work is needed to bring these nutrients to consumers. This work is a collaboration, within the newly formed interdisciplinary Center at ZHAW - Combining Competencies in Micro-algae (CCMA), which aims to promote micro-algae research in Switzerland,

**Objectives:** To enrich selected food products using commercial dried micro-algae (*Chlorella vulgaris*) with focus on consumer acceptability, as well as nutritional benefits.

**Method / Design:** Small-scale product development was done on cookies, muffins, spaghetti. Based on preliminary trials, acceptable addition levels of dried *C. vulgaris* were 0.5, 1.4%, and 1.0%,