



## *Report of Congress*



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# Polyphenols Applications

June 6-7, 2013 - Bonn University, Germany



After six successful conferences held in Malta and Paris, the **Seventh World Congress on Polyphenols Applications** took place in Bonn, Germany, on June 6-7, 2013 under the auspices of the **International Society for Antioxidants in Nutrition and Health (ISANH)**, the **French Society of Antioxidants (SFA)**, and the **Japanese Society of Antioxidants (JSA)**.

**Prof. Dr. Marvin Edeas**, Chairman of ISANH, and **Prof. Dr. Andreas Schieber**, Chairman of the Scientific Committee and local organizer of the conference, welcomed more than **130 academics and industry representatives** from **28 countries** at Collegium Leoninum, a former seminary for priests and today a four-star hotel and congress venue. **Prof. Dr. Peter Stehle**, Dean of the Faculty of Agriculture of the University of Bonn and himself active in polyphenol research, extended a welcome note to the audience.

Bonn Polyphenols 2013, which was **financially supported by Eckes-Granini** (Nieder-Olm, Germany) featured an interesting blend of world class keynote speakers and highly recognized experts in the field and also provided a platform for the next generation of emerging talents, postdoctoral researchers and PhD students, to present the latest results of their work on polyphenols. Taking the conclusions from Paris Polyphenols 2012 to Bonn, the 2013 conference covered topics of utmost current interest, such as the role of polyphenols in human health, bioavailability of phenolics, stability of polyphenols during processing, recovery and application of phenolic compounds from by-products, and modern methods of polyphenol analysis in foods and physiological samples.

In his introductory keynote lecture on the first day, **Prof. Dr. Francisco Tomás-Barberán** (CSIC, Murcia, Spain) highlighted the importance of the interactions between polyphenols and gut microbiota and pointed out the research needs and perspectives of applications. Subsequent presentations given by **Dr. Paul Kroon** (Norwich, UK), **Dr. Clarissa Gerhäuser** (Heidelberg, Germany), **Prof. Dr. med. Harald Hönsch** (Darmstadt, Germany) and **Prof. Dr. Rikard Landberg** (Uppsala, Sweden) were dedicated to the role of polyphenols in cardiovascular disease and diabetes, cancer prevention, chronic inflammatory bowel diseases, and to alkylresorcinols as biomarkers of whole grain intake. **Prof. Dr. Rosa Maria Lamuela-Raventos** from the University of Barcelona (Spain) presented her recent

investigations into tomato polyphenols and **Ales Bartl** (Brussels, Belgium) gave an overview of regulatory issues associated with polyphenols. **Prof. Dr. Ulrich Engelhardt** (Braunschweig, Germany) highlighted chemistry and potential health effects of polyphenols from coffee, tea, and cocoa. Short oral presentations on the phenolic metabolome of stevia (**Prof. Dr. Nikolai Kuhnert**, Bremen, Germany), effects of berry phenolics on gut health (**Dr. Gordon McDougall**, Dundee, UK), absorption and metabolism of procyanidin B4 (**Katharina Bittner**, Münster, Germany), chemoenzymatic preparation of silybin metabolites (**Prof. Dr. Vladimir Křen**, Prague, Czech Republic) and effects of quercetin on lipid metabolism (**Dr. Ewert van Schothorst**, Wageningen, The Netherlands) concluded the first day of Bonn Polyphenols 2013.

**Prof. Dr. Reinhold Carle** (Hohenheim University, Stuttgart, Germany) was the keynote speaker of the second day of the conference and gave an overview of studies into the recovery and application of polyphenols as natural food ingredients. Reactions of water-soluble and lipid-soluble antioxidants including phenolic compounds were covered in the presentation given by **Prof. Dr. Leif Skibsted** (Copenhagen, Denmark). **Prof. Dr. Luke Howard** (Fayetteville, AR, USA) highlighted grape pomace as a source of polyphenols and their extraction using subcritical water. **Alma Fernanda Sánchez Maldonado** (Edmonton, AB, Canada) presented a new method for the extraction and separation of glycoalkaloids and phenolic acids from potato peels, and **Michelle Feuereisen** (Bonn, Germany) introduced Brazilian pepper as a source of antimicrobial polyphenolics.

The afternoon session “Analysis of Polyphenols in Foods and Dietary Supplements” was dedicated to **Prof. Dr. Rudolf Galensa**, Chair of Food Chemistry at the University of Bonn, in recognition of his lifetime contributions to the field of polyphenol analysis. In his laudation “Polyphenols for Life”, **Prof. Dr. Ulrich Engelhardt** surveyed Rudolf Galensa’s professional career, starting with his thesis on HPLC of flavonoids in 1979, and gave an overview of his accomplishments, awards, most important projects and publications. “Rudolf Galensa stands for excellent science, excellent teaching, and a special sense of humour”, Prof. Engelhardt concluded. The audience gave standing ovations when Prof. Galensa took the floor to acknowledge his wife and co-workers for their support. **Dr. Benno Zimmermann**, **Maïke Gleichenhagen**, **Elvira Jungfer**, and **Lisa Kothe**, who are current members of his research group, presented to him as a very special gift a two-volume hardcover compilation of his publications.

The subsequent scientific program proceeded with **Dr. Benno Zimmermann**’s overview of UHPLC as a tool for polyphenol analysis in foods and physiological samples. **Prof. Dr. Chlodwig Franz** (Vienna, Austria) highlighted the importance of polyphenols in quality and authenticity control of dietary supplements based on botanicals. Consequences of exposure to polyphenol-rich foods and beverages and their colonic metabolites were presented by **Dr. Anna-Marja Aura** (Espoo, Finland). **Prof. Dr. Michael Gänzle** (Edmonton, AB, Canada) gave a talk on sorghum polyphenols and their effects on the microbial ecology of cereal fermentations. **Maïke Gleichenhagen** presented the results of her PhD thesis on intrinsic labeling of polyphenols by cultivation of plants in a <sup>13</sup>C carbon dioxide atmosphere. Finally, **Dr. Sandrine Milesi** (Loos, France) introduced the potential of methyl tetrahydrofuran as a green solvent for polyphenol extraction and purification.

**Prof. Dr. Francisco Tomás-Barberán** and **Prof. Dr. Reinhold Carle** received the 2013 Polyphenols Award in recognition of their outstanding contributions to research on polyphenols.

In their conclusions, **Prof. Dr. Marvin Edeas** and **Prof. Dr. Andreas Schieber** expressed their appreciation to all speakers and poster presenters for their excellent contributions, which made this congress a huge success. According to them, interactions of polyphenols with gut microbiota will continue to be an area of intense research activities and very likely take up even more room in future polyphenol congresses.

7<sup>th</sup> International Conference on

# Polyphenols Applications

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## Scientific Programme

*Day 1 - June 6, 2013*

### 8h50 Opening Session and Introduction

*Prof. Dr. Marvin Edeas, President of ISANH and Congress Chairman, France*

### 9h00 Welcome Addresses

*Prof. Dr. Peter Stehle, Dean of the Faculty of Agriculture, University of Bonn, Germany*

*Prof. Dr. Andreas Schieber, Local Organizer and Chairman of the Scientific Committee, Germany*

### Session 1: Metabolism and Health Effects of Polyphenols

*Chair: Prof. Dr. Marvin Edeas*

#### 9h15 Polyphenols, Gut Microflora and Human Health

*Prof. Dr. Francisco A. Tomás-Barberán, CEBAS-CSIC, Spain*

#### 9h55 Role of Polyphenols in Cardiovascular Disease and Diabetes

*Dr. Paul A. Kroon, Institute of Food Research, United Kingdom*

#### 10h25 Break & Posters Session

#### 10h55 Dietary Cancer Prevention by Polyphenols – Recent Advances

*Dr. Clarissa Gerhäuser, German Cancer Research Center, Heidelberg, Germany*

#### 11h25 Polyphenols & Chronic Inflammatory Bowel Diseases: Preventive and Therapeutic Effects

*Prof. Dr. Harald Hoensch, Marienhospital, Darmstadt, Germany*

#### 11h55 Whole Grain Cereals and Polyphenols: Recent Advances and Perspectives

*Prof. Dr. Rikard Landberg, Department of Food Science, Swedish University of Agriculture Science, Sweden*

#### 12h25 Lunch Break & Posters Session

### Session 2: Polyphenols Bioavailability & Metabolomics

*Chair: Prof. Dr. Michael G. Gänzle*

#### 14h00 Introduction about Polyphenols Bioavailability and Metabolomics: What's New?

*Dr. Paul A. Kroon, Institute of Food Research, United Kingdom*

#### 14h15 Polyphenols and Food Metabolomics

*Prof. Dr. Rosa-Maria Lamuela-Raventos, University of Barcelona, Spain*

### Session 3: Polyphenols, Market & Claims: The EFSA's Red Line

#### 14h45 Polyphenols & Regulation: Latest Developments in EU Legislation

*Mr Ales Bartl, McKenna Long & Aldridge LLP, Brussels, Belgium*

## Session 4: Polyphenols & Functional Foods & Drinks: From Sciences to Innovations

### 15h15 General Introduction on Polyphenols & Functional Foods and Drinks

*Practical Case: Polyphenols & Tea, Coffee and Cocoa: From Chemistry to Health Effects*  
*Prof. Dr. Ulrich Engelhardt, University of Braunschweig, Germany*

### 15h30 Break & Posters Session

### 16h00 Lessons from the Investigations of full Phenolic Metabolome Profiles in Identical Plant Species and closely related Members of Plant Families

*Nikolai Kuhnert, Jacobs University, Bremen, Germany*

### 16h15 Beneficial Effects of Berry Polyphenols in the Gut: Effects on Food Digestion and Colon Cancer

*Gordon J. McDougall, Environmental and Biochemical Sciences Group, The James Hutton Institute, Dundee, United Kingdom*

### 16h30 Systemic Absorption and Metabolism of Procyanidin B4 in Pigs

*Katharina Bittner, Institute of Food Chemistry, Westfälische Wilhelms-Universität Münster, Germany*

### 16h45 Multistep Chemoenzymatic Preparation of Phase II Silybin Metabolites

*Vladimir Křen, Institute of Microbiology, Academy of Sciences of the Czech Republic, Prague, Czech Republic*

### 17h00 Quercetin induces Hepatic Lipid Omega-oxidation and Lowers Serum Lipid Levels in Mice

*Evert M. van Schothorst, Human and Animal Physiology, Wageningen University, Wageningen, The Netherlands*

### 17h15 End of the First Day

### 19h30 Thursday Dinner at Restaurant DaCapo - Fritz - Schroeder Uffer - Bonn

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## *Day 2 - June 7, 2013*

## Session 5: Technological Aspects and Stability of Polyphenols

*Chair: Prof. Dr. Dr. h.c. Reinhold Carle*

### 9h00 Recovery and Application of Polyphenols as Natural Food Ingredients

*Prof. Dr. Dr. h.c. Reinhold Carle, University of Hohenheim, Stuttgart, Germany*

### 9h40 Reactions of Polyphenols during Processing – an Overview

*Prof. Dr. Leif Skibsted, University of Copenhagen, Denmark*

### 10h10 Covalent Polyphenol-Protein Interactions – Challenges and Research Needs

*Prof. Dr. Sascha Rohn, University of Hamburg, Germany*

### 10h40 Break & Posters Session

### 11h10 Polyphenols from By-products of Food Production: Subcritical Water Extraction of Polyphenols from Grape Pomace

*Prof. Dr. Luke Howard, University of Arkansas, Fayetteville, USA*

### 11h40 Extraction and Separation of Phenolic Acids and Glycoalkaloids from Potato Peels using Food Grade Solvents

*Alma Fernanda Sanchez Maldonado, University of Alberta, Alberta, Canada*

### 11h55 Characterization and Antimicrobial Activity of Polyphenols from Brazilian Pepper Fruits (*Schinus terebinthifolius* Raddi)

*Michelle M. Feuereisen, University of Bonn, Bonn, Germany*

### 12h10 Lunch Break

## Session 6: Analysis of Polyphenols in Foods and Dietary Supplements

*Session Dedicated to Prof. Dr. Rudolf Galensa,  
University of Bonn in Recognition of His Lifetime Contributions to the Field  
Chair: Prof. Dr. Andreas Schieber*

**13h30 Laudation**

*Prof. Dr. Ulrich Engelhardt, University of Braunschweig, Germany*

**13h45 UHPLC as a Tool for Polyphenols Analysis in Foods and Physiological Samples**

*Dr. Benno Zimmermann, University of Bonn, Germany*

**14h15 Polyphenols as Tools in Quality and Authenticity Control of Dietary Supplements**

*Prof. Dr. Chlodwig Franz, University of Veterinary Medicine, Vienna, Austria*

**14h45 Detection and Consequences of Exposure to Polyphenol-rich Foods and Beverages and their Colonic Microbial Metabolites in vivo and in vitro**

*Anna-Marja Aura, VTT Technical Research Centre, Espoo, Finland*

**15h00 Effect of Polyphenolic Compounds in Sorghum Grains on the Microbial Ecology of Cereal Fermentations**

*Michael G. Gänzle, University of Alberta, Edmonton, Canada*

**15h15 Polyphenols – Intrinsically Labeled with the Stable Isotope <sup>13</sup>C**

*Maïke Gleichenhagen, University of Bonn, Bonn, Germany*

**15h30 Industrial Potential of Methyltetrahydrofuran as a “Green” Solvent for the Extraction and Purification of Polyphenols**

*Sandrine Milesi, Purifunction, Loos, France*

**15h45 Discussion & Conclusion of Bonn Polyphenols 2013**

**16h00 Bonn Polyphenols 2013 Awards**

**16h15 Network Session around Drinks & Snacks – Posters Presentation**

**17h00 End of Bonn Polyphenols 2013**

