

INTERNATIONAL SOCIETY OF ANTIOXIDANTS

12th WORLD CONGRESS ON

Polyphenols Applications



University of Bonn - Germany

September 25-28, 2018



Congress Tracks:

- Polyphenols-microbiome interactions
- Metabolism & health effects of polyphenols
- Technological & biotechnological aspects of polyphenols
- Characterization and analysis of polyphenols and their metabolites
- Polyphenols innovations in 2018
- Polyphenols as natural additives and pigments

Key dates:

Mon. Registration Date
Sept. 10, 2018

Mon. Poster Submission
Sept. 10, 2018

Bonn Polyphenols 2018 Speakers



Non-estrogenic xanthohumol derivatives improve cognitive function in diet-induced obese mice

Jan Frederik Stevens
Oregon State University, USA



Bonn Polyphenols 2018: General Introduction & Welcome Note

Peter Stehle
University of Bonn, Germany



Development of microbial production platforms for plant polyphenols

Mattheos Koffas
Rensselaer Polytechnic Institute, USA



The effects of novel processing technologies on the stability of polyphenols

Isabel Odriozola Serrano
University of Lleida, Spain



Investigating the biological activities of extracts from winery by-products

Christine Fuchs
Technische Universität Kaiserslautern, Germany



Phenolic compounds in food waste valorization: figures & perspectives

Richard Maroun
Saint-Joseph University of Beirut, Lebanon



Polyphenols and chronic disease risk: epidemiological perspectives

Ute Nöthlings
University of Bonn, Germany



Why biotransformation matters: species differences in isoflavone metabolism and biological implications

Sebastian Soukup
Max Rubner-Institut, Germany



Biosynthesis of acylphloroglucinols: novel phenolics from strawberry fruit

Wilfried Schwab
Technical University of Munich, Germany



Polyphenols-microbiome interactions from a food microbiologist's view

Michael Gänzle
University of Alberta, Canada



Anthocyanins – Color enhancing strategies

Reinhold Carle
University of Hohenheim, Germany



Processing as a modifier of polyphenol delivery and bioactivity

Mario Ferruzzi
North Carolina State University, USA



Impact of diet on human gut microbiota composition and functionality

Daniela Graf
Max Rubner-Institut, Germany



Activity guided fractionation of red fruit juices to identify alpha-amylase and alpha-glucosidase inhibitors in vitro

Kirsten Berger
University of Kaiserslautern, Germany



Pineapple (*Ananas comosus* (L.) Merr.) as a source of unique phenolic compounds: analysis and applications as authenticity markers

Christof Steingass
University of Hohenheim, Germany



Stabilization of anthocyanins by co-pigmentation using mango peel and rooibos phenolics

Judith Müller-Maatsch
University of Hohenheim, Germany

Introduction Note by the President of Bonn Polyphenols 2018

Dear Colleagues,

On behalf of the International Society of Antioxidants in Nutrition and Health (ISANH) and the Scientific Committee, we are pleased to announce the **12th World Congress on Polyphenols Applications: Bonn Polyphenols 2018** to be held at the University of **Bonn, Germany** on **September 26-28, 2018**. Bonn Polyphenols 2018 will bring together experts from academia and industries to discuss the latest scientific advances in the field of polyphenols and their applications in food, pharmaceutical and medical sciences.

This year, the University of Bonn celebrates its 200th anniversary, highlighting the achievements and offering a varied program of close to 100 events. We are very pleased that the Organizing Committee has decided to hold the 12th edition of the World Congress on Polyphenols Applications at the University of Bonn in this anniversary year.

Research on plant phenolics has a long tradition at the University of Bonn. Authentication of plant-derived foods via analysis of the profile of phenolic compounds, recovery of secondary plant metabolites including phenolics from by-products, color stability of anthocyanins, and bioavailability studies on flavonoids have been key topics of former and current research groups at the Institute of Nutritional and Food Sciences. More recently, antimicrobial properties of phenolics and microbiome-polyphenols interactions have attracted our interest.

The 2018 edition of the World Congress on Polyphenols Applications will address these topics and many additional areas of current interest to the polyphenols community such as:

- *Polyphenols-Microbiome Interactions*
- *Bioavailability, metabolism & health effects of polyphenols and their metabolites*
- *Technological & biotechnological aspects of polyphenols*
- *Characterization and analysis of polyphenols and their metabolites*
- *Polyphenols Innovations in 2018*
- *Polyphenols as natural pigments & additives: Science, Industry & Marketing*

Session 1: Polyphenols-Microbiome Interactions

There is consensus in the scientific community that phenolic compounds are extensively metabolized by the human microbiome, and evidence is accumulating that phenolics present in food have an effect on the composition of gut microorganisms. This session addresses latest findings in the field from a cross-disciplinary view, including microbiology and food chemistry, and will highlight the following strategic points:

- Microbiota, polyphenols & food: recent advances & perspectives / modifying the microbiota through food
- Microbiota, polyphenols, food industry and formulation: presentation of the innovations
- Microbiota, polyphenols, food industry and regulatory aspects

Session 2: Metabolism & Health Effects of Polyphenols

Phenolic compounds have been associated with numerous beneficial effects on human health. The session will provide an overview of latest investigations into the interrelationship between bioavailability, metabolism and bioactivity, including among others, anti-obesity and cardiometabolic effects. In this session, we will address the question whether the beneficial effects observed are related to polyphenols or to polyphenols metabolites.

Focus on Polyphenols, Epidemiology & Neurodegenerative Diseases

In this session, we will focus on the neurodegenerative diseases. Indeed, epidemiological studies associating the intake of polyphenol-rich foods with a lower incidence of certain diseases including neurodegenerative diseases have greatly facilitated research on phenolic compounds. The objective of this session will be to provide an update on recent findings related to epidemiological research on polyphenols and the role these compounds play in cognitive health.

Session 3: Characterization and Analysis of Polyphenols and Their Metabolites

Despite tremendous advances in analytical chemistry, the characterization and quantification of phenolic compounds is still challenging because of the structural heterogeneity of this class of secondary metabolites. The session will present novel analytical approaches including hyphenated techniques such as LC-MS and LC-NMR, characterization of novel structures, and innovations in sample preparation for the determination of free and non-extractable phenolics.

Session 4: Technological & Biotechnological Aspects of Polyphenols

There is still a gap in our knowledge about the effects of processing on the stability of phenolic compounds. In this session, we will address studies that deal with the impact of conventional and novel processes, such as heating, high hydrostatic pressure treatment, pulsed electric fields, and others, on plant phenolics. Furthermore, the application of phenolics as natural functional compounds to replace synthetic food additives will be covered. The session will also present recent trends in the biotechnological production of phenolic compounds.

Session 5: Polyphenols Innovations in 2018

The session will highlight approaches in product development, exploitation of novel sources of phenolic compounds, characterization and application of novel nutraceuticals based on plant phenolics, and new processes for extraction and formulation of polyphenols. In this session, we will answer the following question: how to formulate with polyphenols and/or polyphenols metabolites to affect gut and skin microbiota?

Session 6: Polyphenols as Natural Pigments & Additives

The industrials from Food & beverage look to replace synthetic colorants with more respectful natural pigments. However many barriers remain in term of extraction, stabilization and industrial applications. The aim of this session is to present the latest advances and innovations in the field of natural pigments and additives and the strategies to convince the consumers.

Abstract submissions for consideration of potential inclusion as oral or poster presentation are welcome for all these topics.

We look forward to welcoming you at the University of Bonn for this special occasion!



Prof. Andreas Schieber

University of Bonn, Germany

President of Bonn Polyphenols 2018

Day 1 – September 25, 2018

17h30 – 19h00 Registration – Badges & Material Delivery at the University of Bonn

Day 2 – September 26, 2018

7h45 Welcoming of Attendees - Registration

9h00 **Bonn Polyphenols 2018: General Introduction by President of Bonn Polyphenols 2018**
Andreas Schieber, University of Bonn, Germany

Session 1: Polyphenols-Microbiome Interactions

Chairs : Marvin Edeas, Michael Gänzle

9h15 **Microbiota 2018: Recent advances and perspectives**
Marvin Edeas, Paris Descartes University, Cochin Institute-Inserm, France

9h40 **Impact of diet on human gut microbiota composition and functionality**
Daniela Graf, Max Rubner-Institut Karlsruhe, Germany

10h05 **Polyphenols-microbiome interactions from a food microbiologist's view**
Michael Gänzle, University of Alberta, Canada

10h30 - Coffee Break & Poster Session

Chairs : Ute Nöthlings, Fred Stevens

11h15 **Development of microbial production platforms for plant polyphenols**
Mattheos Koffas, Rensselaer Polytechnic Institute Troy, USA

11h40 **Short oral presentations** (7 minutes for presentation + 3 min for questions)

Combined food ingredient polyphenols and probiotic bacteria for improved biological activities
Rachid Bel-Rhlid, Nestlé Research, Switzerland

Impact of curcuma longa consumption on the gut microbiota composition of cardiovascular patients
Emanuel Vamanu, University of Agricultural Sciences & Veterinary Medicine Bucharest, Romania

Short-term supplementation with flavanol-rich cocoa improves lipid profile, antioxidant status and positively influences the arachidonic acid / eicosapentanoic acid ratio (AA:EPA) in healthy subjects
Sergio Davinelli, University of Molise, Italy

A single dose of a polyphenol-rich seaweed extract is insufficient to blunt elevated postprandial glycaemic responses in the evening, in healthy adults: a randomised cross over trial
Margaret Murray, Monash University, Australia

Ginkgo biloba extract attenuates oxidative DNA damage upon in vitro digestive conditions
Daniela Oliveira, University of Minho, Portugal

Citrus flavonoid supplementation improves exercise performance in trained athletes
Yala Stevens, Maastricht University Medical Center, The Netherlands

Can flavonoids and/or their metabolites influence the platelet aggregation?
Premysl Mladenka, Charles University, Czech Republic

12h50 – Group Picture, Lunch Break & Poster and Exhibitor Session

Session 2: Metabolism & Health Effects of Polyphenols

Chairs : Daniela Graf, Elke Richling

14h00 Polyphenols and chronic disease risk: epidemiological perspectives

Ute Nöthlings, University of Bonn, Germany

14h25 Non-estrogenic xanthohumol derivatives improve cognitive function in diet-induced obese mice

Jan Frederick Stevens, Oregon State University Corvallis, USA

14h50 Short oral presentation (7 minutes for presentation + 3 min for questions)

Dietary intake of polyphenols is inversely associated with body mass index in European adolescents: the Helena study

Ratih Wirapuspita Wisnuwardani, Ghent University, Belgium

Effects of polyphenolic extract from pine bark on the inattention and hyperactivity in children and adolescent with attention deficit hyperactivity disorder based on the antioxidative status

Li-Hsuan Hsieh, Taipei Medical University, Taiwan

Evidence that polyphenols chemosensitize 5-Fu-treated human colon cancer cells

Constanze Friederike Buhrmann, Ludwig-Maximilian-University Munich, Germany

Analgesic effects of quercetin in chemotherapy-induced neuropathic pain in rats

Hee Kee Kim, University of Texas MD Anderson Cancer Center, USA

15h30 - Coffee Break & Poster Session

Session 3: Characterization and Analysis of Polyphenols and Their Metabolites

Chairs : Wilfried Schwab, Maïke Passon

16h20 Why biotransformation matters: species differences in isoflavone metabolism and biological implications

Sebastian Soukup, Max Rubner-Institut, Germany

16h45 Pineapple (*Ananas comosus* (L.) Merr.) as a source of unique phenolic compounds: analysis and applications as authenticity markers

Christof Steingass, University of Hohenheim, Germany

17h10 Short oral presentations (7 minutes for presentation + 3 min for questions)

Extraction and analysis of phenolic acids in human plasma

Lisa Abel, University of Bonn, Germany

Cytoprotective mechanisms of enolate-forming compounds

Richard Michael Lopachin, Albert Einstein College of Medicine, USA

Utilization of rapeseed pomace (RSP) extract: A study into its phenolic contents, in vitro anti-oxidant properties and in vivo activation of oxidative stress response enzymes

Franziska Pohl, Robert Gordon University, UK

Enhancement of the antioxidant efficiency of gallates in intact fish oil-in water emulsions

Sonia Losada Barreiro, Universidad de Vigo, Spain

Special talk on wine and health:

Possible protective action of wine polyphenols against common neurodegenerative diseases

Silva Paula, University of Porto, Portugal

18h05 End of the day

20h00 Bonn Polyphenols Dinner at TAO Restaurant :

Mildred-Scheel-Str. 1, 53175 Bonn

A pickup will be organized from University to the restaurant and back to the University after dinner

If you wish to take part, please register at Infotmation desk.

Day 3 – September 27, 2018

8h20 Opening of Day 3 : Note from Peter Stehle, Dean of the Faculty of Agriculture, University of Bonn, Germany

Session 4: Technological & Biotechnological Aspects of Polyphenols

Chairs : Reinhold Carle, Ralf Schweiggert

8h30 Phenolic compounds in food waste valorization: figures & perspectives

Richard Maroun, Saint-Joseph University of Beirut, Lebanon

8h55 Effects of processing on the bioactivity of phenolics compounds

Mario Ferruzzi, North Carolina State University Kannapolis, USA

9h20 Effects of novel processing technologies on the stability of polyphenols

Isabel Odriozola Serrano, University of Lleida, Spain

9h45 Investigating the biological activities of extracts from winery by-products

Christine Fuchs, Technical University of Kaiserslautern, Germany

10h10 Biosynthesis of acylphloroglucinols: novel phenolics from strawberry fruit

Wilfried Schwab, Technical University of Munich Freising, Germany

10h35 - Coffee Break & Poster Session

Chairs : Andreas Schieber, Richard Maroun, Zeina Hobaika

11h30 **Short oral presentations** (7 minutes for presentation + 3 min for questions)

Tomato waste as feedstock to extract phenolic compounds with anti-oxidant and anti-inflammatory bioactivity

Parisa Abbasi Parizad, University of Milan, Italy

Downstream processing of waste in marzipan industry for material use of polyphenol fraction

Veronika Hellwig, University of Applied Sciences, Lübeck, Germany

Polyphenol recovery from fruit, olive oil and wine industrial wastes by liquid extraction

Jose-Luis Cortina, Barcelona Tech UPC, Spain

UHPLC-ESI-QTOF-MS profile of polyphenols in Goji berries (*Lycium barbarum* L.) and its dynamics during in vitro gastrointestinal digestion and fermentation

Gabriele Rocchetti, University Cattolica del Sacro Cuore, Italy

Characterization by LC-QTOF-MS of phenolic compounds in methanol extracts of *Syzygium polyanthum* leaves

Ihsan Iswaldi, Universitas Prasetya Mulya, Indonesia

Effect of ultrasound-assisted extraction on the phenolic composition of avocado peel extracts

Igor Trujillo-Mayol, Del Bio Bio University, Chile

Valorization of plant biomass feedstock by assessing the chemical composition of polyphenols and antioxidant potential of their extracts

Liga Lauberte, Latvian State Institute of Wood Chemistry, Latvia

12h40 - Lunch Break & Poster Session

14h00 **Short oral presentations** (7 minutes for presentation + 3 min for questions)

The interlink of UV transmittance and flavonoids in Okra driven by diurnal changes

Susanne Neugart, Loyola University New Orleans, USA

Simultaneous prediction of ultrasound-assisted extraction for total phenolic content and free radical scavenging activity of kidney beans (*Phaseolus vulgaris* L.)

Qiongqiong Yang, Department of Food Science & Technology, Shanghai Jiao Tong University, China

Session 5: Polyphenols Applications & Innovations in 2018

Chairs : Mario Ferruzzi, Isabel Odriozola Serrano

14h30 Activity guided fractionation of red fruit juices to identify alpha-amylases and alpha-glucosidase inhibitors *in vitro*
Kirsten Berger, University of Kaiserslautern, Germany

14h55 A blend of polyphenols, rich in tannins, as a successful alternative growth promoter in poultry chickens
Leandro Martin Redondo, Instituto Nacional de Tecnología Agropecuaria, Buenos Aires, Argentina

15h20 Short oral presentation (7 minutes for presentation + 3 min for questions)

Quercetin Phytosome™, a new bioavailable food grade delivery solution
Elisabetta Frattini, Indena S.p.A., Italy

Cellular quercetin accumulation and localization under stress
Hanne Vissenaekens, Ghent University, Belgium

15h40 Coffee Break & Poster Session

Chairs : Krasimir Dimitrov, Christof Steingass

16h15 Short oral presentations (7 minutes for presentation + 3 min for questions)

Polyphenol hydrogel for new generation of functional food and beverages
Ivan Petyaev, Lycotec, United Kingdom

Polyphenols for aquaculture applications: is there a future?
Marina Paolucci, University of Sannio, Italy

Generation of a glycodiversification platform for polyphenols in *Escherichia coli* K12
Constantin Ruprecht, University of Hamburg, Germany

Encapsulation strategies for improving yarrow phenolic compounds stability during gastrointestinal digestion
Marisol Villalva Abarca, Universidad Autónoma de Madrid, Spain

Ellagitannins and gallotannins as α -amylase and α -glucosidase inhibitors in type 2 diabetes
Vera Muccilli, Università degli Studi di Catania, Italy

Flavonoids-pectin interaction: the effect of iron content, flavonoids structure and pH
Libi Chirug, Technion, Israel

Mechanism of the inhibition of *in vitro* trypsin activity by vegetable leaf polyphenol extracts
Rotimi Emmanuel Aluko, University of Manitoba, Canada

Anthocyanins in potato towards the understanding of their genetic control
Teresa Mosquera-Vásquez, National University of Colombia, Colombia

In vivo antifibrotic activity of polyphenols from *Tamarix nilotica*
Noha Fouad Swilam, British University in Egypt, Egypt

Curcumin stabilized pickering emulsion: physical and chemical stability
Aditya Nayak, INRA, Nantes, France

Investigation of haze-related protein-phenol conjugates in beer
Sisse Jongberg, University of Copenhagen, Denmark

Chestnut shell polyphenols: recent advances and applications
Elena Coccia, University of Sannio, Italy

18h15 End of the day

Day 4 – September 28, 2018 (half-day)

8h55 Opening of day 4

Special Session: Polyphenols as Natural Pigments & Additives Science, Industry & Marketing

Chair : *Andreas Schieber*

9h00 **Laudation**
Ralf Schweiggert, University of Geisenheim, Germany

9h15 **Anthocyanins – Color enhancing strategies**
Reinhold Carle, University of Hohenheim, Germany

9h45 **Stabilization of anthocyanins by co-pigmentation using mango peel and rooibos phenolics**
Judith Müller-Maatsch, University of Hohenheim, Germany

10h15 Coffee Break & Poster Session

Chairs : *Alessandra Napolitano, Rotimi Aluko*

10h45 **Short oral presentations** (7 minutes for presentation + 3 min for questions)

Oxidative coupling of chlorogenic acid with tryptophan: toward a natural product-based food dye
Alessandra Napolitano, University of Naples Federico II, Italy

Control of Maillard reactions in lactose hydrolysed UHT-processes milk by green tea extract
Mahesha M. Poojary, University of Copenhagen, Denmark

Curcumin as antimicrobial agent: delivery, mode of action and applications
Victor Rodov, Volcani Center, Israel

Polyphenols from pecan nut shell as natural additives for food applications
Lucia Panzella, University of Naples Federico II, Italy

The role of polyphenols as additives in the feed industry
Cristina Murcia Garcia, Kaesler Nutrition GmbH, Germany

Generation and structural elucidation of polar polyphenol derived chromophores, color enhancing of alkalized cocoa powders
Daniel Christian Germann, Technische Universität München, Germany

Color & reactivity of cyanidin derivatives affected by the stereochemistry of glycosidic substitutions
Gregory T. Sigurdson, The Ohio State University, USA

Complexation of anthocyanins by pectin fragments in model fruit juice
Lena Rebecca Larsen, University of Bonn, Germany

12h05 **Concluding Remarks of Bonn Polyphenols 2018**

Bonn Polyphenols Awards 2018

12h30 **Lunch Break & End of Bonn Polyphenols 2018**