

# International Society of Antioxidants in Nutrition and Health

12<sup>th</sup> World Congress on Polyphenols Applications

September 25-28, 2018 - University of Bonn, Germany



## **BONN POLYPHENOLS 2018**

### Preliminary Agenda



## 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.** Early Bird Registration  
**Sept. 10, 2018**
- Mon.** Poster Submission  
**Sept. 10, 2018**
- Tues.** Short Oral Submission  
**July 31, 2018 (closed)**

## 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

# 12<sup>th</sup> World Congress on Polyphenols Applications

September 25-28, 2018 – University of Bonn, Germany

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## Scientific Preliminary Agenda

### Day 1 – September 25, 2018

17h00 – 18h30 Registrations – 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  
*Prof. Dr. Andreas Schieber, University of Bonn, Germany*

Bonn Polyphenols 2018: Welcome Note  
*Prof. Dr. Peter Stehle, Dean of the Faculty of Agriculture, University of Bonn, Germany*

### Session 1: Polyphenols-microbiome interactions

9h15 Polyphenols, microbiota, metabolites and short chains fatty acids: Where is the target?  
*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

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

11h45 Short oral presentations ( 7 + 3 min)

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*

*12h55 – Lunch Break & Poster and Exhibitor Session*

**Session 2: Metabolism & health effects of polyphenols**  
*Polyphenols, Epidemiology & Neurodegenerative Diseases*

**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**  
*Jan Frederick Stevens, Oregon State University Corvallis, USA*

**14h50 Short oral presentation (7 + 3 min)**

**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*

**Psidium fruits: a wealth of polyphenols**  
*Carolina Rojas-Garbanzo, University of Costa Rica, Costa Rica*

*15h40 - Coffee break & poster session*

**Session 3: Characterization and analysis of polyphenols and their metabolites**

**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 + 3 min)**

**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*

**The effect of different polyphenolic extratscs of *Salix* sp (Willow) on the exsheathment of gastrointestinal nematode larvae**

*Manal Haj-Zarubi, Galilee Society, Israel*

18h00 End of the day

20h00 Bonn Polyphenols Dinner

## Day 3 – September 27, 2018

8h25 Opening of day 3

### Session 4: Technological & biotechnological aspects of polyphenols

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, Technische Universitaet Kaiserslautern, Germany*

10h10 Biosynthesis of acylphoroglucinols: novel phenolics from strawberry fruit  
*Wilfried Schwab, Technical University of Munich Freising, Germany*

*10h35 - Coffee break & poster session*

11h30 Short oral presentations (7 + 3 min)

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, 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  
*Gabriela 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 Prasetiya Mulya, Indonesia*

Effect of ultrasound-assisted extraction on the phenolic composition of avocado peel extracts  
*Igor Alfonso, 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 - Group Picture, Lunch Break & Poster Session*

14h00 Short oral presentations (7 + 3 min)

The interlink of UV transmittance and flavonoids in Okra driven by diurnal changes  
*Susanne Neugart, Loyola University New Orleand, 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, China*

### Session 5: Polyphenols applications & innovations in 2018

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 Martín Redondo, Instituto Nacional de Tecnología Agropecuaria, Buenos Aires, Argentina*

15h20 Short oral presentation (7 + 3 min)

Quercetin Phytosome™, a new bioavailable food grade delivery solution

*Antonella Riva, Indena S.p.A. Milano, Italy*

Cellular quercetin accumulation and localization under stress

*Hanne Vissenaekens, Ghent University, Belgium*

15h40 Coffee Break & Poster Session

16h15 Short oral presentations (7 + 3 min)

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*

Chestnut shell polyphenols: recent advances and applications

*Elena Coccia, University of Sannio, Italy*

Generation of a glycodiversification platform for polyphenols in *Escherichia coli* K12

*Constantin Ruprecht, University Hamburg, Germany*

Encapsulation strategies for improving yarrow phenolic compounds stability during gastrointestinal digestion

*Marisol Villalva Abarca, Universidad Autónoma de Madrid, Spain*

*Vaccinium meridionale* pomace as ingredient for the development of functional greek yogurt

*Gloria Astrid Garzon, Universidad Nacional de Colombia, Colombia*

Ellagitannins and gallotannins as  $\alpha$ -amylase and  $\alpha$ -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*

18h05 End of the day

## Day 4 – September 28, 2018 (half-day)

8h55 Opening of day 4

### Special workshop: Polyphenols as natural pigments & additives Science, Industry & Marketing

The aim of this workshop is to highlight the strategic role of polyphenols as natural additives and pigments based on three axes:

- (i) Present the recent scientific advances of polyphenols as potential natural pigments & additives
- (ii) Discuss the industrial aspects and how to switch from synthetic to natural pigments
- (iii) Discuss how to convince the consumers

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 Short oral presentations (10 + 5 min)

Curcumin as antimicrobial agent: delivery, mode of action and applications

*Victor Rodov, Volcani Center, Israel*

*10h30 Coffee Break & Poster Session*

11h00 Short oral presentation (10 + 5 min)

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*

Oxidative coupling of chlorogenic acid with tryptophan: toward a natural product-based food dye

*Alessandra Napolitano, University of Naples Federico II, Italy*

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*

Control of Maillard reactions in lactose hydrolysed UHT-processes milk by green tea extract

*Mahesha M. Poojary, University of Copenhagen, Rolighedsvej, Denmark*

12h10 Concluding remarks of Bonn Polyphenols 2018

Bonn Polyphenols Awards 2018

12h30 Lunch Break & End of Bonn Polyphenols 2018