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N°3, FEBRUARY 2017

NEWSLETTER

EUROCAROTEN

EUROPEAN NETWORK TO ADVANCE CAROTENOID RESEARCH AND APPLICATIONS IN AGRO-FOOD AND HEALTH

WELCOME

We are pleased to welcome you to the third issue of the EUROCAROTEN newsletter.

In this issue of the newsletter we would like to invite you to check the Think Tank (TT) Information, as we will be talking about the selection of the future TT Representatives for the year of 2017-2018. The TT Group is the intermediary between the ECIs and the EUROCAROTEN Committees, and every year, 2 news representatives are chosen.

Also in this issue we would like to present you Dr. Cristina L. M. Silva, Professor at the Catholic University of Portugal (UCP), member of WG2 and responsible for the development of the EUROCAROTEN Website. We talk about β-Cryptoxanthin as our "Carotenoid of the Month", and share the experience of Sanja Vlaisavljevic as an STSM Candidate. In addition, you can find some information about WG2.

Last but not least, the program for the upcoming EUROCAROTEN meeting in Skopje is now available.

You can find more information about EUROCAROTEN COST Action on COST website http://www.cost.eu/COST_Actions/ca/CA15136 and on our website www.eurocaroten.eu.

Yours sincerely,
Joana Corte-Real
Paula Mapelli-Brahm
Kristina Kljak

Subscription to the newsletter e-mailing is available via the EUROCAROTEN website (www.eurocaroten.eu).
For further information, please contact us via our e-mail info@eurocaroten.eu.
You can also send us your comments and proposals.

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The obtained results showed that the tasted samples possess a high cytotoxic activity, especially marine algae that are still unexplored source of bioactive molecules."

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"It is one of the six carotenoids found in human blood, being the fourth in concentration in plasma, after lycopene, beta-carotene and lutein. Nutritionally, β-cryptoxanthin is a provitamin A carotenoid…"

Impact of food processing on the carotenoid level
"In food production, carotenoids are quite resistant to pH change but are very sensitive to high temperature, the impact of light and show a tendency of oxidation when not protected from light and other atmospheric conditions."

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In this issue of the EUROCAROTEN Newsletter we would like to talk about the application and selection procedure for the 2017-2018 Think Tank Group Representatives.

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"WG2 will work in collaboration to underpin and strengthen the scientific database that will facilitate the design and development of high-quality, safe, appealing, functional and sustainable carotenoid-containing foodstuffs."

FUTURE EVENTS AND OTHER NETWORKS

SAVE THE DATE

13th & 14th February 2017
EUROCAROTEN 3rd MC & 2nd WG meetings

SKOPJE | FYR MACEDONIA

FUTURE EVENTS

EUROCAROTEN 3rd MC & 2nd WG meetings

13th & 14th February 2017 | Skopje, FYR Macedonia
Hotel Continental in Skopje

ORGANISATION: COST Action EUROCAROTEN, the Institute of Chemistry of the Faculty of Natural Sciences and Mathematics at the Ss. Cyril and Methodius University, and the University of Sevilla

SCHEDULE MONDAY 13TH FEBRUARY
Day will open with **Welcome Note**, and morning hours will be occupied with **Think Thank Event**, and presentation of **candidacies for next EUROCAROTEN meeting venues**. Morning session will close with **talks by invited speakers**. The afternoon will continue with **WG1, WG2 and WG3 satellite meetings**, and the first day will close with the **summary of WGs progress** and decisions made.

SCHEDULE TUESDAY 14TH FEBRUARY
Day will start with **WG4 meetings**, and this event will be closed with the **MC meeting.**

INVITED SPEAKERS:

Alejandro Cifuentes (CIAL-UAM-CSIC, Spain)
Title: Food, cancer and Foodomics: Recent results

Kostlend Mara (INRA Versailles, France)
Title: Plant new breeding techniques and their regulatory status

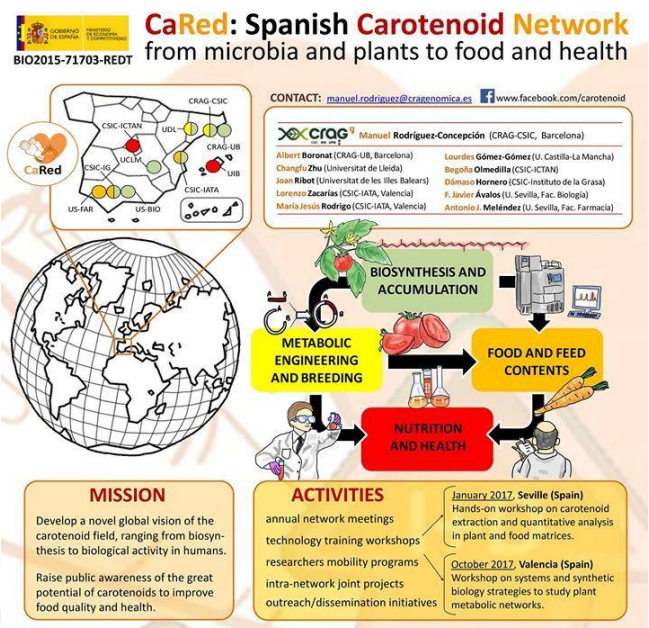
Peter Sylvander (Astareal, Sweden)
Title: Astaxanthin – From academic lab to commercial product.

For more information please contact:
Marina Stefova (marinaiv@pmf.ukim.mk)
Jasmina Petreska Stanoeva (jasmina.petreska@pmf.ukim.mk)

OTHER NETWORKS

CaRed: Spanish Carotenoid Network
From microbia and plants to food and health

https://www.facebook.com/carotenoid



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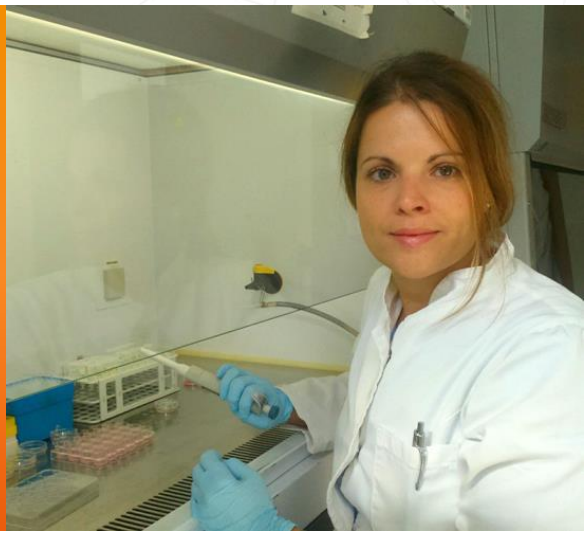
FINISHED STSMs
EXPERIENCE REPORT

SANJA VLAISAVLJEVIC

IN VITRO INVESTIGATIONS OF BIOLOGICAL ACTIVITIES OF DIFFERENT CAROTENOID-RICH FOOD

Affiliation	Department of Chemistry, Biochemistry and Environmental Protection, University of Novi Sad
Position	Research Associate
Host Institution	Dr. Sabina Passamonti, Department of Life Sciences, University of Trieste, Italy
E-mail:	sanja.vlaisavljevic@dh.uns.ac.rs



The topic of the COST Action CA15136 is very popular in food science, and I found that it could be very useful for my research career. The STSM Grant allowed me to realize my research plans related to molecular nutrition, which I am interested.

Dr. Passamonti hosted me in her lab, where I was coached in the application of new techniques to test the bioactivity of carotenoids from different food sources. These compounds occur in fruits and vegetables. Thus, they are an important part of the human diet and they have been associated with health benefits.

My working plan was directly connected with on-going research projects of both institutions, and aimed at investigating novel aspects of carotenoid-rich food, with special emphasis on anticancer and antioxidant activity of these compounds. The aim of this STSM was examine anticancer and antioxidant properties of the tomato and algae samples.

The obtained results showed that the tested samples possess a high cytotoxic activity, especially marine algae that are still unexplored source of bioactive molecules. Therefore, this research is very important to assess the impact of these food sources on human health. The obtained research results and discussions generated by this STSM program will be reported in at least one joint scientific publication and open some new joint research perspectives in both countries.

This STSM program has therefore provided important results and new perspectives to my ongoing research. This program was a professional challenge as well as an important professional experience.

I would like to take the opportunity to thank the Grant Holder of the COST Action EUROCAROTEN, very professional STSM Coordinator and the Management Committee for financial support and perfect collaboration. Further, many thanks to Dr. Sabina Passamonti including all the members of her research group for their help, patience and support during my stay in their lab and Trieste.

Read more @ www.facebook.com/eurocaroten

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EUROCAROTEN INTERVIEW

TALKING WITH:

Cristina L.M. Silva

Affiliation Portuguese Catholic University – College of Biotechnology (ESB)
Position Associate Professor
Country Portugal

Area of Interest Food Processing & Optimization, Food Quality & Safety, Mathematical Modelling, Fruits & Vegetables

Link to other interviews and networks:
http://www.effost.org/
https://www.iseki-food.net/
http://www.globalharmonization.net/

Please tell us a bit about your lab and what you work on?

In our lab, the main research is dedicated to quality and safety of processed fruits and vegetables, with special emphasis on mathematical modelling and optimisation of the processes. Food quality and safety changes due to conventional thermal treatments (e.g., blanching, pasteurization and sterilization, drying and freezing), and novel processes (e.g., ozonation, ultraviolet and ultrasound) are evaluated taking into consideration physico-chemical parameters, bioactive compounds and/or microbial aspects. Due to their importance as a bioactive compounds, carotenoids are assessed in our routine laboratory analyses, either to characterize a food matrix or to see what happens to them after processing and storage.

Which area of carotenoids research do you find most interesting?

As a group focused on the design and optimization of food process conditions, we are very interested in how carotenoids, along with other quality parameters, affect the food products and how they are affected by different treatments. As a multidisciplinary group, formed by chemical engineers, food engineers and microbiologists, our challenge is to design and control processes that can assure food with the required quality and safety, with an extended shelf-life.

As a STSM hosting lab, what type of collaborative projects would you envision?

I envision a cooperative collaboration in which the student will have access to all the appropriate equipment and know-how to evaluate the effect of different processes on a particular carotenoid. In turn, our group will be able to acquire knowledge on the specific methodologies for the determination of carotenoids.

In your eyes, how can the EUROCAROTEN COST Action contribute to carotenoid research?

Beyond any doubt, EUROCAROTEN will allow a better understanding of the full potential of carotenoids, as well as the identification of the main gaps that must be investigated. Since in our group we are focused mainly on the effects of processing on the food quality and safety, I expect that this Action can contribute to improve the food process conditions, ensuring final products with the highest quality standards.

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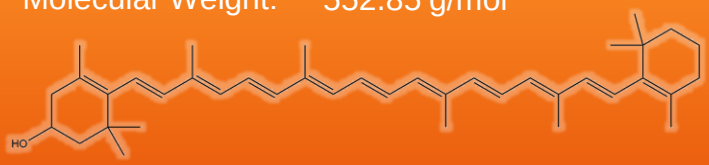
CAROTENOIDS IN OUR DAILY LIFE

CAROTENOID OF THE MONTH

Name: β-Cryptoxanthin

Chemical Formula: $C_{40}H_{56}O$

Molecular Weight: 552.85 g/mol



IMPACT OF FOOD PROCESSING ON THE CAROTENOID LEVEL

In food production, carotenoids are quite resistant to pH change but are very sensitive to high temperature, the impact of light and show a tendency of oxidation when not protected from light and other atmospheric conditions. During food processing, they may be changed due to the process of auto-oxidation and isomerization in the presence of organic acids. Also, studies suggest that processing operations can also lead to an increase of the carotenoids content primarily because they facilitate dissociation from plant matrix components. The best known positive effect of thermal heating is on the lycopene content in tomato products such as ketchup, paste or juice. Heat treatment induces an exchange in the lycopene structure (isomerization) during which the *trans*-isomer changes to the *cis*-isomer, which has better absorption capacity and greater bioavailability. Non-invasive food processes, with the common characteristic of preserving the nutritional and sensory quality of the product from the content of phytochemicals to a specific product colour, are increasingly developed and popularized. Some of the mentioned modern methods that have found successful application in processing are: vacuum drying, non-invasive thermal treatments such as microwaves, non-thermal treatments such as ultrasound, pulsed electric field, and others.

Text by Jana Šic Žlabur
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β-CRYPTOXANTHIN

The carotenoid β-cryptoxanthin is, more specifically, a xanthophyll due to the hydroxyl group on one side of the molecule. It is one of the six carotenoids found in human blood, being the fourth in concentration in plasma, after lycopene, beta-carotene and lutein. Nutritionally, β-cryptoxanthin is a provitamin A carotenoid, because of a β-ionone ring in the structure, which can be converted to active retinol, or vitamin A, in the body. Some studies suggest that its bioavailability is higher than that of other provitamin A carotenoids. This carotenoid is also an antioxidant, protecting organs and tissues from oxidative damage, so it plays an important role in preventing degenerative diseases. Recently, its role in bone health has received some attention, since some studies suggested that it may have an anabolic effect on the bone, which may help to delay osteoporosis. The major dietary sources of β-cryptoxanthin are citrus fruit mainly mandarins, with contents ranging from 0.83 to 2.57 mg/100 g, followed by oranges with levels between 0.45 - 1.27 mg/100 g. New oranges varieties (Rohde Red Valencia, Rohde Late Navel and Ambersweet) have been reported to have high levels of β-cryptoxanthin. It can also be found in some vegetables as bell peppers, and other fruits, such as papaya, mango and peaches. In all cases, the content of β-cryptoxanthin depends on the type of fruit, variety, maturity and agronomic factors.

Text by Dr. Carla M. Stinco Scanarotti
Research associate at University of Seville, Spain
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THINK TANK
STSM INFORMATION

APPLICATION AND SELECTION OF THE 2017-2018 TT REPRESENTATIVES

The Think Tank Group is the intermediary between the Early Career Investigators (ECIs) and the EUROCAROTEN Committees, and is one of the responsible groups for the dissemination of information via social networks, EUROCAROTEN Webpage and Newsletter. Each year, two new Think Tank Representatives are chosen to assure a fair opportunity for ECIs to take on leadership roles within the EUROCAROTEN network.

This year, in April, two new Representatives will be appointed from among our ECI network. In this issue of the EUROCAROTEN Newsletter we are presenting the application and selection procedure for the 2017-2018 Think Tank Group Representatives. We feel that this could be a great opportunity not only for early stage researchers, but also for PhD students, to develop their leadership skills and start creating their own contacts network.

WHO CAN APPLY?

All ECIs and PhD students, working with participating members of the EUROCARTEN COST Action, are welcome to apply. We remind that an ECI is a researcher within a time span of up to 8 years from the date they obtained their PhD/doctorate (full-time equivalent).

HOW TO APPLY?

We invite every ECI and PhD willing to apply, to send us their CV and a brief text explaining their motivations to take part in the Think Tank Group to our email: think.thank@eurocaroten.eu. The call is open until March 10th 2017.

SELECTION PROCESS

This year we will be selecting one ECI and one PhD student, from our list of candidates. The selection process will take into account geographical and gender balance issues. In addition, the involvement in previous activities related to the Think Tank Group will be considered as an advantage. The applications will be evaluated by the current Think Tank Committee Members and by the Chair and Vice-Chair of the Action Dr. Antonio J. Meléndez-Martínez and Prof. Carmen Socaciu.

The New Think Tank Representatives will be announced in next issue of the newsletter and presented during next EUROCAROTEN's MC and WG meeting.

For any questions regarding the Think Tank activities, or application process, feel free to contact us directly.

We look forward to hearing from you.

THINK TANK
OF EARLY CAREER INVESTIGATORS AND OTHER YOUNG RESEARCHERS

Representatives for 1st year:

Joana Corte-Real (joana.corte-real@lih.lu)
Paula Mapelli-Brahm (pmapelli@us.es)

ECI spokesperson:

Kristina Kljak (kkljak@agr.hr)

WORKING GROUP NEWS

WG 2. QUALITY ALONG THE FOOD CHAIN

WG2 includes food scientists and technologists, chemists, toxicologists and nutritionists. WG2 will work in collaboration to underpin and strengthen the scientific database that will facilitate the design and development of high-quality, safe, appealing, functional and sustainable carotenoid-containing foodstuffs.

Additionally, WG2 will endeavour to assess the quality of published data in the European databases of carotenoid levels in food and develop harmonized protocols regarding carotenoid analysis, bioaccessibility and bioavailability. WG2 will also use online surveys to assess consumers' preferences for and willingness to accept carotenoid-rich foodstuffs. Activities within this Working Group include the organization of training schools, workshops, conferences, and networking with other on-going initiatives.

Leader: Nora O'Brien (nob@ucc.ie)

Vice Leader: Anamarija Mandić (anamarija.mandic@fins.uns.ac.rs)

ACKNOWLEDGEMENTS

We would like to thank everyone who has so kindly contributed with the content present in this newsletter:

Jana Šic Žlabur and **Carla M. Stinco Scanarotti** for their contribution to the Carotenoid of the Month rubric.

Nora O'Brien and **Anamarija Mandić** in WG2 description.

Sanja Vlaisavljevic who has so kindly given her testimony.

Cristina L.M. Silva for her contribution to our EUROCAROTEN Interview.

Antonio J. Meléndez Martínez and Cristina L.M. Silva for their guidance and supervision during the development of the EUROCAROTEN Newsletter.

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