



# Proceedings

of the

# 5<sup>th</sup> International Conference on Food Digestion



**Rennes, France**  
**April 4-6, 2017**

**INFOGEST**

## Scope and welcome address committees

Dear Delegates,

It is a great pleasure for me to welcome you in my hometown Rennes for the 5<sup>th</sup> International Conference on Food Digestion (ICFD5). This event is organized by INFOGEST, an international network that aims at “Improving Health Properties of Food by Sharing our Knowledge on the Digestive Process”. The specific objectives of the network are to:

- compare the existing digestion models, harmonize the methodologies, validate them towards *in vivo* data and propose guidelines for performing new experiments
- identify the bioactive components that are released in the gut during food digestion
- demonstrate the effect of these compounds on human health
- determine the effect of the matrix structure on the bioavailability of food nutrients and bioactive molecules

Between 2011 and 2015, INFOGEST was supported by European funding. It gathered more than 340 scientists from 37 countries (Europe but also Canada, Australia, Argentina, New Zealand, USA...). Connections between academic partners and industry were also reinforced via the participation to INFOGEST of more than 40 food companies. INFOGEST allowed staff exchanges between partners, organized 8 workshops, 4 training schools and 4 Conferences during the period. Since 2015, thanks to the help of industry sponsors, we have been able to continue our networking activities and 3 new workshops in Athens, Wageningen and Norwich were organized. Three new Working Groups are currently running: WG1 on correlation between *in vitro* and *in vivo* data, WG2 on the development of a semi-dynamic model of *in vitro* digestion and WG3 on *in vitro* digestion models for specific populations (infant, elderly). In Rennes, 3 new WGs will be launched: WG4 on digestive lipases and lipid digestion, WG5 on digestive amylase and starch digestion and WG6 on *in silico* models of digestion. These WGs are fully open to new comers, so feel free to participate if you are interested!

The first edition of the ICFD was held in Cesena in 2012 and gathered 150 delegates. In 2013, more than 200 participants met in Madrid whereas participation reached a peak in Wageningen in 2014 with 248 delegates and was in Naples with 224. This year, once again, the conference will be a success since it will welcome more than 215 participants from 27 countries. More than 200 abstracts were submitted with an extremely high scientific level and the selection of the oral presentation by the scientific committee was extremely difficult! So, I would like to thank the Local Organizing Committee for their efforts to welcome you in the most comfortable conditions and the Scientific Committee for offering you such an exciting programme!

We are in the process of making INFOGEST recognized by INRA as an “International Research Network” that would guarantee to continue our networking activities until mid-2022. The mailing list and website ([www.cost-infogest.eu](http://www.cost-infogest.eu)) are still active and will be regularly updated and the **6<sup>th</sup> International Conference on Food Digestion (ICFD6)** will be held in **April-May 2019**. I would like to thank my friend Alan, vice-Chair of INFOGEST and the Working Group leaders and deputy leaders to help me running the network. Finally, I couldn't finish this introduction without acknowledging Nathalie who is still taking care of most, if not all, the administrative tasks so efficiently.

So on behalf of the Local Organizing Committee and the Scientific Committee, I wish you an excellent Conference and hope to see you again at the 6th International Conference on Food Digestion in 2019!

Didier DUPONT  
Chair of INFOGEST



# Scientific and organizing committees

## Scientific committee



Didier Dupont  
*INRA, France  
(Chair)*



Alan Mackie  
*University of Leeds,  
United Kingdom*



Uri Lesmes  
*Technion - Israel Institute  
of Technology*



Francesco Capozzi  
*University of Bologna,  
Italy*



André Brodkorb  
*Teagasc,  
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Isidra Recio  
*CIAL (CISC-UAM)  
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Alessandra Bordoni  
*University of Bologna,  
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Alison Lovegrove  
*Rothamsted Research,  
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## Posters presentations - Abstracts



Laura, Argentina

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Monounsaturated fatty acids are essential nutrients that have been related with prevention of cardiovascular disease and must be incorporated in the human diet. However, as they are highly oxidizable, controlled delivery systems need to be designed to protect and release them into the target site. Therefore, microcapsules are an adequate alternative to protect and control the release of these nutrients. However, when adding lipids into a microcapsule, it is necessary to take into account not only the stability of the inactive compound in the wall of the product but also the release behavior through gastrointestinal digestion.

The aim of this work was to evaluate colloidal stability of powdered liposomes of essential fatty acids in simulated gastrointestinal conditions. Microcapsules were obtained by emulsion-solvent evaporation method using milk whey protein isolate (MWPI), polyvinyl alcohol (PVA) and polyethylene glycol (PEG) as stabilizers. Microcapsules were prepared by emulsion-solvent evaporation method using MWPI, PVA and PEG as stabilizers and essential fatty acids as active ingredients. The microcapsules were prepared at pH 7 (37°C, 2h). Samples collected from gastric and intestinal digestion were analyzed by optical microscopy, dynamic light scattering (DLS) and zeta potential. The results showed that the microcapsules were stable in gastric conditions, but they were not stable in intestinal conditions. The zeta potential of the microcapsules was positive in gastric conditions and negative in intestinal conditions. The results showed that the microcapsules were stable in gastric conditions, but they were not stable in intestinal conditions. The zeta potential of the microcapsules was positive in gastric conditions and negative in intestinal conditions. The results showed that the microcapsules were stable in gastric conditions, but they were not stable in intestinal conditions. The zeta potential of the microcapsules was positive in gastric conditions and negative in intestinal conditions.

**Effects of food matrix and delivery system interactions on lipid bioavailability**A.J. Muhammed<sup>1,2</sup>, E. Demircan<sup>1</sup>, B.Özçelik<sup>1\*</sup><sup>1</sup>Istanbul Technical University, Turkey; <sup>2</sup>University of Tikret, Iraq

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Dietary fatty acids, main building units of more complex molecules such as triacylglycerols and phospholipids, are represented in supramolecular structures. They are generally inserted in complex food matrices, and then given incredible manners and improvement of innovation on food structures. The behavior of food components in the digestive system may be affected by food matrix. To control the digestion, release and absorption of lipophilic components within the gastrointestinal tract, a variety of delivery systems have been applied within the food industry. Some structured systems offer advantages for the delivery of lipophilic active components. This work reviews the effects of food matrices and food delivery systems on lipid digestibility and bioavailability in regards to their potential health consequences. The interactions of the non-lipid components with fatty acids such as proteins, carbohydrates and minerals as well as the factors which have impacts on the lipid digestibility and bioavailability are discussed. The methods used in the assessment of bioaccessibility, bioavailability and digestion mechanism are described. Research data on the effects of intermolecular structure of lipid, food matrix, and processing are summarized. Finally, trends in the development delivery systems are presented.

## 5<sup>th</sup> ICFD Statistics

Country	Number	Country	Number
Argentina	5	Japan	1
Australia	2	Lithuania	1
Belgium	4	Mexico	1
Brazil	2	New Zealand	3
Canada	2	Norway	5
China	4	Poland	3
Denmark	7	Portugal	2
Finland	1	Singapore	1
France	75	Spain	24
Germany	5	Sweden	1
Ireland	5	Switzerland	5
Israel	1	The Netherlands	22
Italy	13	Turkey	7
		United Kingdom	12

214 participants from 27 countries

### Submissions received

Oral communication	95
Poster	105

## Sponsors

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