

GRANADA, SPAIN
MARCH 21 – 24, 2010

The 13th Food Colloids International Conference was held at the Museum of Sciences of Granada (Spain) between the 21 and 24 March 2010. The meeting was organised by the Fluid Physics and Biocolloids Group under the auspices of the University of Granada. The Local Organising Committee and the International Advisory Board designed a scientific programme, which was highly multidisciplinary; including participants from different scientific disciplines such as physics, chemistry, biology, mathematics, chemical engineering, pharmacy, food science and nutrition.

The relationship between Food and Health is becoming increasingly important due to the obesity crisis in the developed world. At present the design of healthier foods constitutes a question of paramount importance for the health sector. At the same time, the design of innovative products that retain its organoleptic properties is a technological challenge for the food industry. Accordingly the scientific interest of this topic is twofold and brings together various different disciplines. The aim of this meeting was to promote dialogue and exchange of ideas between leading scientists so as to foster future progress and collaborations in a field which has a crucial economic impact on society, health and wellbeing. The Food Colloids 2010 was highly international with delegates from 30 different countries from all continents. The scientific programme consisted of 5 plenary lectures, 39 oral presentations and 138 posters. The conference was organised along 4 themes associated with the relationship between Food and Health. The general topics that formed the titles of the sessions included:

1. Colloid and Biopolymer Interaction, Before and After Eating
2. Designing Structure to Deliver Functionality and to Control Reactivity
3. Molecules and Particles at Interfaces
4. New Techniques in Food Colloids (spectroscopy, microscopy, modelling, ...)

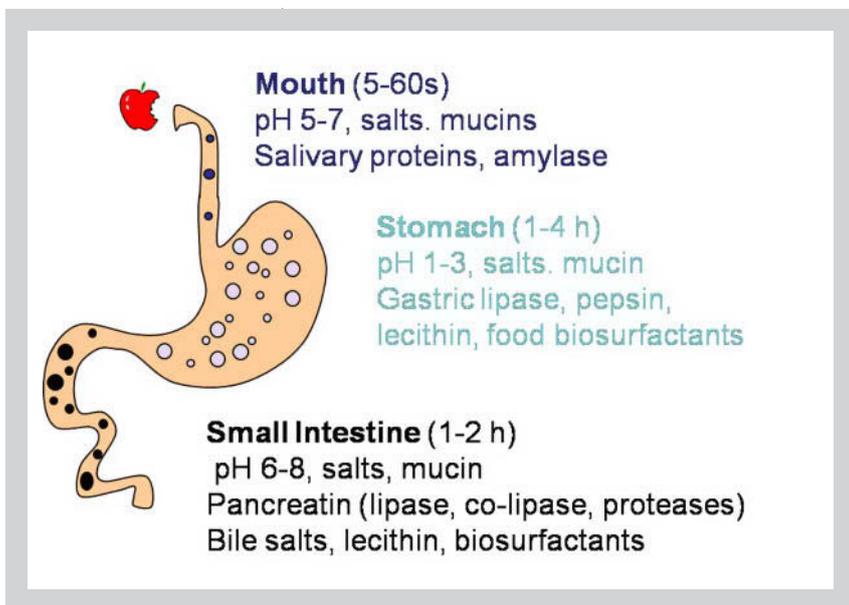
Each of these topics was introduced by a Plenary Invited Lectured imparted by renowned scientists in the field which was followed by short oral presentations within the same research topic. Lively and extended discussions followed invited talks and oral contributions. Two sessions were dedicated to the presentation of the posters so as to promote the exchange of ideas and scien-

tific discussions between participants.

The first topic "Colloid and Biopolymer Interaction, Before and After Eating" was introduced by Prof. Eric Dickinson who offered a general overview on the history of research in Food Colloids. This contribution highlighted the vital contribution of fundamental colloidal science to the Food Industry and showed how the future of food science is moving towards the design of healthier foods. Understanding the behaviour of food products in the gastrointestinal tract is a major challenge towards the rational of food with tailored nutritional and therapeutic properties. This achievement will require the use of specialised experimental techniques and active collaborations between scientists of different disciplines. The rest of the session included recent advances in the use of experimental techniques such as small angle neutron scattering, SDS page electrophoresis, Confocal and Atomic Force Microscopy and surface tension techniques. The discussion agreed in a need of adopting rigorous approaches to elucidate generic questions that will enable a more comprehensive understanding of the process of food digestion.

The second topic "Designing Structure to Deliver Functionality and to Control Reactivity" included two plenary contributions. Prof. Hardinger Singh focused on the current knowledge of the behaviour of protein stabilised emulsions under in-vitro digestion as a crucial factor towards the future formulation of emulsions that would allow controlled release of lipids. The contribution of Prof. Julian Mclements dealt then with recent advances in encapsulation and release of food components. It was concluded that emulsion technology (nanoemulsions, multiple emulsions, filled hydrogel...) offers a wide range of routes to develop edible delivery systems with specific targets. The talks and discussions in this sessions provided more specific studies in this line. The impact on lipid digestion of the use of mixtures in emulsion formulation and interestingly, supracolloidal organisation such as isasomes were presented. Also, novel delivery systems based on milk proteins and protein-polysaccharides interactions were discussed.

The third topic was devoted to "Molecules and Particles at Interfaces" and was introduced by Dr. Peter Wilde. Key reactions to solubilise lipids and lipid soluble nutrients take place at the lipid-water interface and it is therefore a critical



search and although some progress has been made in this field, the complex nature of the gastrointestinal tract requires a much more systematic effort in order to fully understand the main processes that govern digestion enabling the rational design of food products with tailored nutritional qualities. Collaborative research and multidisciplinary approaches promoted by the Food Colloids conferences are crucial if we are to tackle this issue effectively in the near future.

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region of study. This lecture presented the current knowledge of interfacial mechanisms underlying lipid digestion which is still scarce. However, the crucial role played by interfaces in fat digestion was recognised and therefore the potential of interfacial composition to optimise and control lipid digestion at a fundamental level. The rest of the session dealt with interfacial characterisation of different systems. Interfaces covered with protein-surfactant mixtures, protein-polysaccharides mixtures, nanoparticles and complex fluids are among the systems considered to engineer the interfacial properties of emulsions.

The last topic “New Techniques in Food Colloids” was introduced by Prof. Isidra Recio who presented the latest developments of functional ingredients based on bioactive peptides derived from food proteins. This communication revealed the whole process from identification of sequence to incorporation into the final food product including digestion and absorption. The importance of the structure of these peptides on biological activity was highlighted. Other talks in this session included the use of specialised techniques such as small angle neutron scattering, subphase exchange, fluorescence microscopy and Confocal Raman spectroscopy to gain insight into the molecular structures of food-grade systems.

As a general conclusion, the importance of Health in the future of Food Colloids was highlighted. Consumers are becoming increasingly aware of the relationship between diet and health emphasising a need for a better physical chemical understanding of the process of digestion. We are facing the challenge to target colloidal science towards the development of natural structures in food with potential health benefits. This is a novel, emerging area of re-