

Editorial



Possible Health Implications of Thermally Processed Foods – COST Action 927

The European COST Action framework in the field of Scientific and Technical Research was founded by the EC in 1971, encouraging the co-ordination of nationally funded research at the European level. Although research activity is not directly funded by the COST program, it can endorse research projects by stating their scientific excellence and international relevance. COST Action supports coordination activities (management committee meetings, expert meetings, travel, *etc.*) and short-term scientific missions (STSM) among laboratories. These missions are intended for young researchers to exchange technology and spread knowledge.

The present COST Action 927, entitled “Thermally Processed Foods: Possible Health Implications”, started in January 2004 and will last until December 2008; it is chaired by Professor Vincenzo Fogliano from the University of Naples Federico II, Italy.

So far, twenty seven European countries have joined this Action as COST Actions are also open to those states which are not full members of the EC. The initiatives of the Action are reported regularly on the web site at <http://www.if.csic.es/proyectos/cost927>.

The main objective of this COST Action is to improve the nutritional quality and safety of heat-processed foods, taking also into consideration the consumer's needs and preferences. Therefore, gaining basic knowledge about the formation of compounds which are beneficial or harmful to health and which are formed during the heat treatment of various foods is one of the key tasks for COST 927. Analytical protocols for the chemical characterisation and quantitation of novel markers of thermal treatment will be developed. The health effects of compounds formed during the heat treatment of foods will be investigated in *in vitro* studies, animal feeding experiments as well as in controlled human trials and epidemiological studies on large populations.

After the health effects of the chemically characterised markers of heat treatment have been determined, the processing conditions of the respective foods will be optimised in order to reduce the content of harmful compounds and increase the amounts of ingredients beneficial to health.

Finally, suggestions will be given to the EC food regulatory authorities to improve the safety and traceability of thermally treated foods.

The scientific activities carried out in the frame of this COST Action are divided into the following five working groups (WG), each one of which is chaired by a European expert in the respective field:

WG 1: Analytical methods, formation pathways and EU regulation (WG leader: Dr. F. J. Morales, Instituto del Frío, Madrid / Spain)

WG 2: Biological methods, risk assessment, consumer perception (WG leader: Dr. S. Salvini, CSPO – Scientific Institute of Tuscany / Italy)

WG 3: Process optimisation and new developments (WG leader: Dr. E. Shimoni, Technion – Israel Institute of Technology / Israel)

WG 4: Absorption and physiological effects (WG leader: Prof. Dr. K.H. Wagner, University of Vienna / Austria)

WG 5: *In vitro* transformations and maintaining health (WG leader: Dr. K. Sebeková, Slovak Medical University Institute of Preventive and Clinical Medicine / Slovakia)

From these activities, a much clearer understanding of the chemical nature and the health risks and benefits of heat-induced compounds in various foods is expected. The Management Committee of COST Action 927 decided to publish the scientific contributions in a peer reviewed journal to improve the dissemination of the results presented at the Action meeting.

The present issue of *Molecular Food & Nutrition Research* comprises contributions from each WG given at the first plenary meeting of COST Action 927 which was held in Prague / Czech Republic, in October 2004. The main topics addressed in the area of food chemistry were the heat-induced formation of polycyclic aromatic hydrocarbons in meat and the formation of compounds preventing heat-induced browning in fruits and vegetables. In order to investigate the exposure to harmful compounds formed in processed meat, the development of a comprehensive database based on a food frequency questionnaire was presented.

The health effects studied were: the effect of heated mixtures prepared from glucose and amino acids on calcium bioavailability; the potential role of bread crust ingredients as prebiotic compounds and the consequences of a dietary intake of Maillard reaction products on biochemical reactions linked to *in vivo* glycation. Of course, these contributions only cover a very small part of the research still to be done. But with the start of COST 927, this first step for an interdisciplinary European approach to improve the quality and safety of thermally treated foods provides hope for substantial progress in the next five years.

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