

HOW DIETARY MAILLARD REACTION PRODUCTS MODULATE INTESTINAL HOMEOSTASIS

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A large body of literature describes the prime importance of food in the development and the modulation, in youth and adults, of gut homeostasis primarily due to its ability to modulate the microbiota profile. However, little is known about the incidence of home or industrial food process and its consequences on intestinal homeostasis. This presentation will be aimed reviewing the recently published data on gut homeostasis modulation by dietary Maillard Reaction Products (MRPs). This is a large family of neoformed compounds generated by the reaction of a reducing sugar with lysin/asparagin-rich proteins generated *in vivo* or during heat treatment of food. Among things, they confer to the food matrix its brownish colour, its flavour and most of the time contributes to the food nutrition properties modulation. In the body, some MRPs tend to accumulate in organs while aging and are often associated with chronic elderly diseases such as diabetes, atherosclerosis or kidney failure. MRPs are divided in a large diversity of molecular weight compounds ranging from early and advanced-glycation end products (AGEs) to terminal complex macromolecules called melanoidins. In general, they are present as a mix in food which renders the characterisation of their effects complex. The purpose of this review of literature will be to highlight the consequences of heat treatment of food, and more especially of AGEs or melanoidins, on the modulation of immune orientation, intestinal microbiota profile, or gut inflammatory response. The presented works will be aimed at pointing out the variability of their consequences on gut homeostasis depending on the form of MRPs studied (e.g., AGEs versus melanoidins) or the physico-chemical properties of the food matrix (e.g., bread crust/crumb; mildly to highly treated rodent chow ...) or the inflammatory model studied. We will present how MRPs may modulate the Th immune response, the risk of developing food-induced immune disorders and their ability to modulate the course of inflammatory bowel diseases. This is a very important topics in reconsideration of western diet and is necessary to consider when making recommendation to patients.

BIOGRAPHY

Pauline M Anton has worked at Dr Bueno's Laboratory in Toulouse (France) on the induction by pesticides residues of a low-grade gastro-intestinal inflammation. She got her PhD in Digestive Pathophysiology, Nutrition and Food Safety from University of Aix-Marseille III (France). She has then spent three years in Harvard University (Beth Israel Deaconess Medical Center - Boston) in Dr Pothoulakis' Lab as a post-doctorate and worked on the neuro-endocrine modulation of *C difficile*-induced intestinal inflammation. She is, since then, an Associate Professor in Physiology in the Institut Polytechnique UniLaSalle (France). She has published more than 30 articles in reputed journals and is regularly proposed as a reviewer of pairs' works.

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