Call for Papers

Food Research International

Salmonella in Foods: Evolution, Strategies and Challenges

Salmonella spp is a heterogeneous bacterial genus within the Enterobacteriaceae family. Although it may have been involved with human and animal infections since ancient times, Salmonella was only known and recognized as a pathogen after the description of its association with the disease (called “salmonellosis”) by Theobald Smith and Daniel Elmer Salmon in the end of the 18th century. Since then, research on Salmonella has evolved and so has the pathogen. Currently, more than 2000 serotypes of Salmonella have been described, some of which are very relevant either for human and animal health. Nowadays, serotypes that have acquired multiple antimicrobial resistances, acid stress adaptation and the ability to survive in foods with low water activity concern. Salmonella is responsible for high rates of morbidity and mortality in the human population. The evolution of Salmonella strains may also include their linking with foods still not associated with the pathogen or new routes of food contamination such as internalization in vegetables. Although the gastrointestinal tract is the natural reservoir of Salmonella, the ability of this pathogen to adapt to adverse environmental conditions makes not only foods of animal origin susceptible to its contamination, but also plant foods. All these facts together have caused Salmonella to rank high on the surveillance list of foodborne disease outbreaks in several countries worldwide. Due to the relevance and widespread nature of Salmonella, food scientists developed several strategies to try to understand its behavior in foods, interaction with humans/food animals and the approaches to eliminate, reduce or control this pathogen from farm to fork. Despite the advances in Salmonella-related research, this pathogen has posed new challenges to microbiologists and food scientists. Due to the high importance of Salmonella for public health, food and animal industry, this special issue of Food Research International aims to reveal current knowledge about the pathogen and its interface with these sectors. It is also our goal to stimulate new approaches to the problem of Salmonella contamination in foods, in order to bring new and relevant findings that may contribute with the advancement of food protection and human health. Manuscripts on “Salmonella” research will be published in a Food Research International special issue in order to make the information easily accessible in one single journal. All the manuscripts will be peer-reviewed and only high quality and impact manuscripts will be published.

Food Research International is now seeking unpublished original manuscripts, short communications and review papers on Salmonella-related research including:

1) Incidence and counts in raw material, foods and beverages. Incidence, counts and tracking of contamination in food chain. Incidence in food animals and tracking of contamination between animal and foods. Emergence of species or serotypes sharing particular characteristics (antimicrobial resistance, for example);

2) Salmonella in the environment: incidence, persistence, survival or growth in soil, water, surface in direct or indirect contact with foods. The role of environment in food contamination and studies describing its pathway. Strategies to avoid Salmonella transference from environment to foods or food contacting surfaces. Methods to detect environmental samples for Salmonella. Cross-contamination, recontamination and their role for food contamination by Salmonella;

3) Intervention strategies to control Salmonella on farms: application of codes of practices to minimize herds’ exposure to Salmonella. Strategies to avoid Salmonella colonization in herds through water and feed, use of vaccines, probiotics, antimicrobials, and immunotherapy. Internalization pathways in fruits and vegetables and intervention methods to avoid Salmonella internalization. Use of good agricultural practices and their role to avoid vegetables contamination by Salmonella. Application of phytosanitary treatments and their role in Salmonella internalization and spreading. Modeling of Salmonella attachment to vegetables and its role in its spread through the food chain;

4) Intervention strategies to control Salmonella during food processing: Use of emergent technologies, hurdle technologies, and their application to control Salmonella growth in novel foods. Biocontrol (bacteriophages). Case studies on design, re-design and validation of steps aiming at inactivating Salmonella during food processing. Stress responses in Salmonella spp, morphological and molecular changes caused by exposure to stressful conditions. Use of chemical approaches to understand modifications at cellular levels;

5) Antimicrobial resistance in Salmonella spp: spreading and acquiring of antimicrobial resistance in/between Salmonella strains, its relationship with clinical cases. Transference of resistance genes and molecular approaches to understand antimicrobial resistance. Association of virulence and antimicrobial resistance genes. Linking
antimicrobial resistance with increased resistance of *Salmonella* to food preservation methods. Methods to study antimicrobial resistance;

6) **Virulence and pathogenesis of *Salmonella***: Expression of virulence genes in food, host and environments. Factors affecting the expression of virulence genes. Markers for virulence in *Salmonella*. Role of quorum sensing for virulence and pathogenesis of *Salmonella*. Molecular insights in *Salmonella* pathogenesis. Role of gut microbiota in *Salmonella* infection. Identification and role of pathogenic islands in *Salmonella* and their relevance for public health;

7) **Behavior of *Salmonella* in foods**: studies on survival, growth and inactivation of *Salmonella* in foods, beverages and environment. Use of predictive modeling to quantify the behavior of *Salmonella* from farm to fork;


9) **Outbreaks and surveillance**: studies on the investigation of *Salmonella* outbreaks and new findings on clinical implications of food-related *Salmonella*. Lessons learned from outbreaks and measures implemented to avoid reoccurrence of outbreaks. Cost analysis of salmonellosis outbreaks. Use of statistical approaches in surveillance. Global and regional trends of salmonellosis. The role of international trade in *Salmonella* spreading. International approaches to track *Salmonella* dissemination;

10) **Legislation and guidelines on *Salmonella* control**: case studies on implementation of guidelines to control *Salmonella* in foods, foods or beverages. New guidelines on *Salmonella* control. Case studies on GMP and HACCP on *Salmonella* control. Case studies on impacts of legislation for *Salmonella* in public health and food contamination;

11) **Consumer knowledge on salmonellosis, behavior and practices on food safety**;

12) **Sampling plans**: development, implementation and evaluation of sampling plans to track *Salmonella*. Statistical basis and improvements in sampling plans to reduce uncertainty of *Salmonella* detection and enumeration in foods and beverages;

13) **Analytical methods**: development, validation and use of new methods for *Salmonella* analysis. Strategies to increase sensitivity/specificity of analytical methods for *Salmonella* analysis. Strategies to increase recovery of injured cells. Development and assessment of automated and alternative (immunochemical, chemical, molecular and microbiological) methods to study *Salmonella* in feed, foods and beverages;

14) **Challenges** from farm to fork on *Salmonella*-related research. Challenges in global initiatives to control *Salmonella*. Challenges in modeling and risk estimation. The role of international agencies, governments and industries in *Salmonella* control.

**Submission guidelines:**
Authors are invited to submit original manuscripts, short communications or review papers for consideration for publication in a *Food Research International* special issue dedicated to *Salmonella*-related research. Please refer to the journal’s Guide for Authors for specific advice on how to prepare a paper (http://www.elsevier.com/locate/foodres ). Papers must be submitted electronically via the Elsevier Editorial System (EES) site for the Journal - http://ees.elsevier.com/foodres - beginning in March 2010 (select Special Issue: *Salmonella*). Closing date for submissions is December 1st, 2010. Inquiries regarding the content of papers may be submitted to Anderson Sant’Ana (assantana@usp.br).

**Timeline:**
March 2010: Beginning of paper submission
1 December 2010: Deadline for paper submission
March 2010-February 2011: Peer-review process
March 2011: All revised manuscripts due
May 2011: Publication