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PREDICTIVE MODELLING IN FOOD (ICPMF11):

BOOK OF ABSTRACTS

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France, Greece, Morocco, Tunisia and Algeria. The project will be developed through an integrated risk-based approach sustained by the concepts of (i) extensive tracking surveys in the artisanal food chains, in order to identify origin, routes of contamination, risk factors favouring pathogens' survival, and technological causes for lack of homogeneity in the quality/safety of end-products; (ii) biopreservation, whereby functional starter cultures and natural extracts will be assessed as extra hurdles to ensure safety and extend shelf-life; (iii) fate studies of pathogens, and (iv) risk process modelling, for the delineation of the most effective bio-interventions, optimisation of process variables and norms/standards, and design of quality monitoring tools.

A safety decision-support IT tool will be developed to enable artisanal producers to assess the lethality of their traditional and biopreservation-based manufacturing processes against pathogens. Uptake of the novel biopreservation technologies and quality monitoring schemes will bring about more efficient, harmonised and reliable food quality management systems of artisanal foods. Small regional businesses can thus become more competitive, and may reassuringly grow into companies of increased production and enlarged markets and exports opportunities. Efforts will be directed at establishing a Platform of Mediterranean Artisanal Food Producers, where food artisans - already in the project and others who wish to join - will keep up linkages with the ArtiSaneFood researchers in order to innovate on products and processes, and solve food safety issues through new collaborations and other ventures.

Keywords: Artisanal foods; biopreservation; starters; antimicrobial extracts; decision-support tool

150: MATHEMATICAL MODELLING AS A TOOL FOR ENSURING MICROBIOLOGICAL SAFETY OF TRADITIONAL FERMENTED FOODS

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Artisanal fermented foods constitute not only important engines for regional economies, but part of the regional cultural heritage. The elaboration of these products, which have delighted us for centuries, results from the producers' knowledge and the invisible action of beneficial bacteria. However, spoilage and pathogenic bacteria are also lurking, and the producers must rely on a set of barriers that oppose their growth, namely: low contamination of raw materials, addition of salts (nitrites/nitrates), low pH, low A_w , smoking, etc. Thus, for further valorisation of traditional foods, it is necessary to ensure their quality and safety. This is where predictive microbiological models (PMM) come into play, making it possible to predict survivability of bacteria considering the environmental conditions (intrinsic and extrinsic) at which foods are subjected. The PMM are fed with laboratory data concerning the relevant microorganisms, challenged under the hurdles of salt, antimicrobials and microbial competition. Dynamic data is then used to estimate the parameters and validate the PMM.

Today, we are witnessing the growth of computing power and the development of web applications for predictive microbiology that are globally available. Thus, artisanal food

producers should benefit from these scientific and technological advances to inform their decisions on the safety of their products. This presentation will be focused on the theoretical concepts of the most appropriate PMM for fermented foods, as well as on the presentation of some practical cases of dynamic PMM applied to these products.

Keywords: Predictive microbiology models; fermentation; hurdles; artisanal foods

74: DECISION-MAKING TOOLS FOR QUALITY AND SAFETY MANAGEMENT OF TRADITIONAL FOODS: THE CASE OF SPANISH-STYLE TABLE OLIVES

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Table olives are considered as one of the most representative traditional fermented vegetables in Mediterranean countries. Modernization and automation artisanal processes have been steadily implemented in the table olive sector since there are still industries lacking of food quality standards for process control. Implementation of quality certifications may serve to protect production methods as well as to increase quality assurance thus providing consumers' confidence in a more globalized market. In this sense, management of food productions is a fundamental aspect consisting on a decision-making process about the quality and safety of a food product coming from a certain lot. Probabilistic models can be integrated in decision-making tools allowing quantification of food safety and quality through the information retrieved from the table olive processing chain.

During the lecture, different applications of existing predictive modelling software on the table olive processing chain will be presented. In addition, a probabilistic model based on a weighing system will be shown, mimicking the production of Spanish-style table olives. This system is populated with physicochemical and microbiological parameters from table olive processing, together with information coming from the HACCP, existing hygiene plans in food industries, EU legislation, current hygienic -sanitary regulations and Codex recommendations. The results presented can be integrated within a software tool which will provide stakeholders with an easy-to-use, flexible and useful probabilistic decision-making scoring system for the Spanish-style table olive food sector. This allows determining the actual quality and safety levels, as well as records' management, and the assessment of the implementation of corrective measures throughout the processing chain. Furthermore, the approach can be extended to other olive varieties and elaboration methods including alternative treatments and steps being easily integrated within the quality management system of food industries.

Keywords: Table olives; probabilistic modelling; software tools; food safety; HACCP
