

**Title:** Innovative Bio-interventions and Risk Modelling Approaches for Ensuring Microbial Safety and Quality of Mediterranean Artisanal Fermented Foods

**Acronym:** ArtiSaneFood

**Duration:** 36 months

**Start date:** 01 June 2019

**SUMMARY**

The objective of this project is to develop efficient bio-intervention strategies, enhanced process criteria, and an easy-to-use food safety decision support IT tool for participating artisanal food producers, aiming to the reduction and control of food-borne pathogens in 15 artisanal fermented foods of meat or dairy origin produced in Portugal, Spain, Italy, 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, predictive dynamic modelling, 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.

**Milestones M1-M12**

<b>Milestone number</b>	<b>Milestone name</b>	<b>Related WP(s)</b>	<b>Due month</b>	<b>Means of verification</b>
M2.1	Majority of the flow charts in place	WP2	3 (Aug 19)	Flow charts available
M9.1	Project identity developed	WP9	5 (Oct 19)	Graphic elements in files
M3.1	Antimicrobial activity of commercial starter cultures tested	WP3	6 (Nov 19)	Quantitative data resulting from <i>in-vitro</i> essays
M9.2	First project's scientific publication	WP9	9 (Feb 20)	Publication uploaded in website
M4.1	Natural extracts selected to be assessed in the target artisanal foods	WP4	11 (Apr 20)	Compilation of data from the literature and <i>in-vitro</i> MIC and MBC from tests
M3.2	Indigenous LAB strains with bacteriocinogenic and acidogenic capacities identified	WP3	12 (May 20)	Quantitative and qualitative data from <i>in-vitro</i> and PCR essays

## Deliverables M1-M12

<b>Deliv #</b>	<b>Deliverable name</b>	<b>WP</b>	<b>Lead particip.</b>	<b>Type</b>	<b>Dissem level</b>	<b>Deliv (M#)</b>
D9.1	Planned communication activities	WP9	ISBST/ UMA	R	PU	M3 (Aug 19)
D2.1	Flow charts of the artisanal fermented products	WP2	UNIBO	R	CO	M4 (Sep 19)
D9.2	Draft of Data Management Plan	WP9	IPB	R	CO	M5 (Oct 19)
D9.3	First divulgation materials	WP9	ISBST/ UMA	DEC	PU	M6 (Nov 19)
D9.4	First version of the ArtiSaneFood website	WP9	ISBST/ UMA	DEC	PU	M7 (Dec 19)
D1.1	The “ArtiSaneFood Methods Pack”	WP1	IPB	DEM	CO	M8 (Jan 20)
D3.1	Suitable starter cultures for enhancing safety and shelf-life of target artisanal foods	WP3	UIZ	R	CO	M12 (May 20)
D4.1	MIC and MBC values of different natural antimicrobials against different indicator microorganisms	WP4	AUA	R	PU	M12 (May 20)

## Programme of the ArtiSaneFood Project's Kick-off Meeting (KOM)

10 July 2019

- 8:30 – 8:45 **Welcome and Introductions** (U. Gonzales-Barron)
- 8:45 – 9:45 **WP1: Management and Coordination** (U. Gonzales-Barron)
- Consortium Agreement (CA)
  - Communication Plan (CP)
  - Data Management Plan (DMP)
  - Plan for Exploitation and Dissemination of Results (PEDR)
  - Construction of the ArtiSaneFood website
  - The ArtiSaneFood Methods Pack: harmonisation of methods (compilation of methodologies for sampling at the artisanal facilities, laboratorial methodologies and protocols for the assessment of starter cultures and antimicrobial extracts, microbiological and physicochemical essays methods, experimental designs for *in-vitro* and *in-situ*, including fate studies, and data analysis methods)
  - Frequency of reports and meetings
  - Status of Grant Agreement of every partner
  - Identification of food products and factories
- 9:45 – 10:45 **WP2: Tracking surveys in the artisanal food production** (A. De Cesare)
- Harmonised flow-charts for artisanal chains (end October)
  - Data and information to collect from companies (suppliers, process characteristics)
    - Definition of qualitative and quantitative data for identification of risk factors
    - Construction of a common data recording spreadsheet for use in surveys
  - Historical microbiological data from companies
  - Analytical protocols for physicochemical (pH, aw, protein, fat, ashes, nitrites, lactic acid) and microbiological (hygiene and pathogenic)
  - European and national microbiological safety regulations
  - Isolation and identification of indigenous lactic acid bacteria
  - Molecular genotyping
  - Data analysis for the identification of risk factors from the surveys' data
- 10:45 – 11:00 *Coffee Break*
- 11:00 – 12:00 **WP3: Bio-preservation by lactic acid cultures** (F. Achemchem)
- Analytical protocols for isolation and identification of LAB
  - Analytical protocols to test antagonistic effect of LAB against pathogens
  - Protocols for phenotypic characteristics and 16S rDNA sequence analysis of LAB

- Testing acidification capacity of LAB
- Standards for sensory analysis (traditional recipe vs. use of starter)

12:00 – 13:00 **WP4: Bio-preservation by natural extracts** (S. Kintzios)

- Construction of a data extraction spreadsheet for antimicrobial capacity of locally-produced extracts
- Analytical protocol for determination of MIC and MBC against spoilage and selected pathogenic bacteria
- Mode of preparation (direct, encapsulated, nano-, etc.) and application (mixture, smearing, packaging, etc.) of extracts to be tested

13:00 – 14:00 *Lunch Break*

14:00 – 15:00 **WP5: Fate studies of pathogens in artisanal foods** (A. Valero)

- Construction of a common data recording spreadsheet for physicochemical and microbial data from fate studies
- Selection of strains to be used in the fate studies (both pathogenic and starters)
- Standardisation of challenge testing protocols in the selected matrices (inoculation procedures, analytical methods, incubation conditions, frequency of data collection and interpretation of results, among other points)
- Procedures for sharing the food-borne pathogenic bacteria isolates and starters for the development of fate studies
- Discussion of protocols for preparation of prototype artisanal foods (average production process)

15:00 – 16:00 **WP6: Dynamic modelling and process safety optimisation** (V. Cadavez)

- Dynamic models to take into account change in physicochemical properties (which?) during mixing, maceration and ripening
- Primary and secondary models to use
- Harmonisation of scripts in R for the ArtiSaneFood application
- R packages to be used

16:00 – 16:15 *Coffee break*

16:15 – 17:00 **Wrapping up WP1-WP6** (U. Gonzales-Barron)

- Actions List
- General discussion

11 July 2019

09:00 – 9:45 **WP7: Intervention strategies in the artisanal food production** (L. Guillier)

9:45 – 10:30 **WP8: Safety decision-support tool for Mediterranean artisanal producers** (F. Tenenhaus)

10:30 – 10:45 *Coffee break*

10:45 – 11:45 **WP9: Dissemination and communication** (N. Mihoubi)

- Planning activities of training and exchange of young researchers in 2019-2020
- Intra-consortium workshops
- Divulgarion activities and workshops at national and international level
- Tele-meetings and recording of demos (which demos?)
- Divulgarion materials: printed, online and social media
- Languages for divulgation materials (who is responsible for translating?)
- Promoting the ArtiSaneFood at the ICPMF11
- Definition of next meetings (6-month and first year's)

11:45 – 12:45 **Final wrap-up WP1-WP9** (U. Gonzales-Barron)

- Tasks planning and responsibilities for M1-M12
- Final Actions List
  - Who does what and when?

12:30 – 13:30 *Lunch*