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Partners




Short Description

- The project presents an innovative proposal in **Food Design & Technology** in the areas of vinegar products (**Agrio**) and food emulsions (**Emulsio**).
- Combines its technical features and food pairing ability, with gastronomic traditions, *Nouvelle Cuisine*, concerns about food in health and unique location of ESAS in Ribatejo, where main vinegar and food emulsions' Portuguese industries stands.
- Started in **2009**, with **final prototypes** (see illustrations) developed to date with **students'** participation, propose the development of new products, who profile into the **gourmet, diet or vegan/veggy** markets, through a **sustainable** methodology that values **regional raw materials** and generates nobility, value and technical-scientific knowledge.
- Prototypes are designed to provide **innovation and convenience**: with long shelf life and multiple food applications, aims the preservation of expensive/seasonal/surplus raw materials and valorization of byproducts.
- With the new technologies, it's intended to contribute to **diversification** of the offer, through distinctive products of more sensorial complexity and new functionalities, also ensuring good practices and food safety.
- Financial analysis highlights the economic **viability** of these prototypes and their adaptability to **industry/restoration**.
- The demand for exquisite products as purchase decision factor, make believe in its potential for growth.

Illustrations



Activities

- Technology and methods are divided into fermentative and non fermentative prototyping:
- Premium quality and special vinegars (SV)** - alcoholic substrates are subjected mainly to classical acetic fermentation in superficial culture.
- Composed vinegar products and food emulsions** - fruit fresh pack pickles, chutneys, jams in vinegar glazes, liqueur and spirit vinegars, flavored and fruity mustards and spreads, vinegars/vinaigrettes, marinades, meal replacements (**MR**) - non fermentative techniques are applied, adjusting a variable set of unit operations, as a function of specific prototype(s):
 Flavoring/speciation, extraction, distillation, sweetening, salting, acid preservation, blending, additivation, gelification, emulsification, heat treatment, high pressure treatment (HPP), membrane separation, others.
- Process assays articulates technical, analytical (physico-chemical, rheological, microbiological) and sensory tests. Realtime stability tests and forced (accelerated) tests are also performed.
- The project cycle ends with the **production of prototypes** in laboratory or small-scale pilot line (technological **activities 1,2,6**), simultaneous with:
- demonstration of their **quality, safety and shelf life (activity 3, QSSL)**, definition of strategies of **marketing (activity 4, Mk)**, **food pairing & food design (activity 5, FP&D)**, predicting a future scale-up to industrial production and product entry on the market.

Quality and Impact of the Project

- Project in a multiregional consortium, with **five** beneficiary entities.
- Most of prototyping technologies have already been created or adapted in ESAS, under this line of work. The activities/tasks are designed to work mainly in parallel by the partners, with a substantial degree of **autonomy and time saving**.
- Given the **maturity** of this **practice-based research project**, the technological scope is **flexible**, and outputs (final prototypes) are adjustable to **stakeholders' needs**, considering business clusters' partnerships and consortium skills.
- It can also contribute towards the creation of qualified jobs, rejuvenation of polytechnic institutions and stimulating private investment in CI&TD, including technology transfer, patenting/licensing of industrial property.
- The project outputs has, as end **receivers**, several **regional companies** - VGT-Portugal; MVPGin, Drinks and Food, Lda; *chef* Rodrigo Castello (Taberna Ó Balcão) and Bee Iellow, Ltd - that are eligible.
- At present time, they are **undergoing experimental development**, fruity mustards (with nectarine or berries), sweet potato pickles, vegan marinades, fruit/vegetable spreads (with strawberry, pumpkin, pepper or sweet potato), a spirit vinegar and a distilled vinegar of vinous origin.

Priority Domains of Intelligent Specialization

National Strategy (RIS31)

Agri-food. "Healthy and sustainable food"; "Safe food and food conservation"; "Food Engineering and Advanced Technologies". **Production Technologies and Process Industry.** "Industrial Biotechnology" and "Greener and efficient production processes". **Production Technology and Product Industry.** "Greener and efficient production processes" and "Innovative products and high added value". **Tourism.** "Exploration of Cultural Heritage"; "Integration of tourism with other activities, in particular with agri-food".

Regional Strategy (ENEI)

ENEI (Alentejo). Food and Forest. **ENEI (Lisboa).** Research. Lines of intervention: "Promoting consolidation of research teams contradicting fragmentation logics and ensuring critical mass" and "Project promotion with strategic alignment between academy and industry". **ENEI (Center).** Sustainable industrial solutions. Lines of intervention: "Processes, materials and products development or sustainable and innovative systems with greater added value for industry and the region". **Valorisation of natural endogenous resources.** Line of intervention: "Products, processes and services development aimed at boosting of value chains associated with endogenous natural resources".

Societal Challenges foreseen in the Horizon 2020: it is considered that this project can contribute, clearly, to the Societal Challenge 2, with regard to **Food Safety**.

Milestones & Deliverables

18 months:

- activity 1 (Agrio tech.)** - Mid-term: March 2018, Final assessment: March 2019.
- activity 2 (Emulsio tech.)** - Mid-term: March 2018, Final assessment: March 2019.
- activity 3 (QSSL)** - Mid-term: Sept. 2018, Final assessment: March 2019.
- activity 4 (Mk)** - Mid-term: Jan. 2018 & Nov. 2018, Final assessment: March 2019.
- activity 5 (FP&D)** - Final assessment: Nov. 2018.
- activity 6 (Beneficiation & Conservation tech.)** - Final assessment: Nov. 2018.

Deliverables:

- 7 Agrio et Emulsio prototypes** (safety, quality, authenticity and shelf-life tested);
- Book** (paper and digital format); Mid-term & Final **Reports**; **Lecture** notes & **Audio-visual** materials; **Technical reports** to be delivered to the company's partners; **Manuals** of innovative development methodologies of new products for polytechnic students; **Video** from students' testimonial about their participation in a research project.

References

- Laranjeira C.M. & Lima M.G. (2016). Scal Agrio et Emulsio: New products development. Project Idea. In: *Atelier of Practice Based Research Projects*. ESTTM: Peniche, 12-13 July, 2016. Available: <https://drive.google.com/file/d/0B8UgA50PnzlibXdUVXFR2ZQMmc/view>
- Laranjeira C.M., Lima M.G., Henriques M., Ruivo P. et al. (2016). *Agrio et Emulsio: New products development*. a) Ficha de Análise de Mérito do Projeto. Approved for application to the Aviso N°2/SAICT/2016, IPSantarém, Ofício n°225 Press, September 16; b) Project application to the Aviso N°2/SAICT/2016, submitted on September 30. Approved July 7, 2017.
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This poster is a minor modification of the original presented at the poster's session event referenced as [3].

