

Department:	Applied Research and Technology/ Quality & Food Safety
Type:	Curricular internship
Role:	Trainee
Site:	Frutech RDI Centre, Maia, Portugal
Proposed Starting Date:	September 2024
Duration:	6 months
Confidentiality:	NDA will be signed between Student, Sending University and Frulact/ no public

About Frulact

Frulact is an international business group, founded in Maia in 1987. Currently, we are positioned as a top-ranked innovative player in the supply of added-value ingredients for the food and beverage industry, focusing on fruit preparations, plant-based dairy alternatives, liquid flavours, and other specialty ingredients.

We are more than 900 Frulacteans, bringing know-how to our clients from our sites in Europe (Portugal, France, Germany and Switzerland), North America (Canada) and Africa (Morocco and South Africa). Frulact's headquarters are based in Maia, and the group is participated by Ardian, a world leading private investment company.

We are offering an **internship opportunity** for our **Applied Research and Technology** department in Maia.

About the Internship

1. TITLE

Development of safe and stable preparations without added preservatives.

2. OBJECTIVES

The aim of the present study is to replace potassium sorbate with a natural antimicrobial compound in order to provide a clean label offer. Potassium sorbate is widely used as a food additive with antifungal effect. This additive prevents the development of fungi during the shelf life of the preparation, but also controls the environmental cross-contamination after opening the packaging in manufacturing site (most often in yoghurt and dairy industry).

The potassium sorbate replacement by a natural alternative compound would allow the development of clean label products with approved stability and shelf life (non-fungal growth).

Provided that most preparations are applied in yogurt, the antimicrobial action should not compromise the activity of the starter cultures naturally present in final product.

Therefore, the challenge is to ensure the absence of microbial growth, both in the preparation and in the milk matrix, as well as to avoid degradation of lactic cultures.

3. TASK DESCRIPTION

3.1. Preliminary study on antimicrobial compounds with antifungal effect

In the first internship stage, it is important to conduct a literature search to identify antimicrobial compounds with antifungal properties in accordance with the legal requirements for their use. This research should involve identifying compounds whose characteristics include: (1) A broad spectrum

of action or defined area of action; (2) The impact of the presence of the compound on the viability of dairy cultures; (3) The composition, in order to understand whether its antimicrobial characteristics can be enhanced or diminished; and (4) Heat stability.

3.2. Determination of the inhibitory capacity

One of the crucial steps of the present study is to know the amount needed for the antimicrobial compound to present antimicrobial function. For this, the testing antimicrobial compounds will be applied in a range of known concentrations of yeasts, molds and bacteria – which are part of Frulact “Micoteca”.

With this Task the team expects to know which the antimicrobial compound percentage is/are more effective over each microorganism tested (yeast, mold and bacteria). This/These percentage/s will be used in the next Tasks.

3.3. Monitoring the microbial load over the shelf life of the preparation/final application (yogurt and/or cheese)

The preparations will be produced with incorporation of selected antimicrobial compounds by the lab team, in order to test the compound in a wide range of preparations (eg. in a range of sugar contents and water activities). Antimicrobial compounds will be added to the preparations in the percentages previously tested (Task 3.2.). After that, the identified microbial load will be inoculated into the preparation. Simultaneously, each preparation will be organoleptically tested before and after dosing into their final application (yogurt and/or cheese).





During the product and the final application shelf-life, the microbiological load will be monitored, analyzed and evaluated in defined timepoints.

In this task is expected that the trainee carries out the tasks of inoculation and monitoring of the microbial load over the preparation and final application shelf-life period.

3.4. Report Writing and Results Presentations

During this internship in various stages, the individual may have to write small reports and prepare presentations to share results and findings with the wider team.

About Trainee’s profile:

-  BSc or MSc student in Food Science, Food Technology, Biochemistry or Chemical engineering (or relevant to food science discipline).
-  Knowledge and interest in Food Microbiology
-  Fluent in English language (Also nice: Portuguese, French)
-  Soft skills: Proactive, collaborative and good interpersonal communications

If you wish to apply, please send your CV to Mafalda.spratley@frulact.com