

CONTROLLING BIOFLAVOUR AND SAFETY IN FERMENTED MEATS PRODUCTS (FMP)

FAIR-CT97-3227

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Background

Quality and safety of fermented meat products are influenced by several factors as e.g. the raw material and fat tissue, the starter strain(s) used, and other additives and the applied process conditions. Optimisation and standardisation of both flavour and safety of fermented meat products requires detailed knowledge of the relative contribution of these factors and their interactions.

This project focuses on a) the origin and development of flavour, being the most important characteristic of quality and b) safety related to the minimal presence of biogenic amines, nitrosamines, lipid oxidation products and mycotoxins in fermented sausages. Both Northern and Mediterranean production processes of dry fermented sausages are considered.

Introduction

The fermentation and drying of a mixture of meat, fat, salt and spices, filled into a casing is a traditional mean of meat conservation. A variety of different fermented sausages are the results of many imprecise variations, caused by the production technology. Therefore, a challenge is raised to standardise and to manage quality.

Northern type products contain beef and pork and are characterised by a relative short ripening period, up to about 3 weeks. Rapid acidulation to final pH values below 5 and smoking rather than drying ensure safety and shelf life. Mediterranean type products are predominantly pure pork products and involve longer ripening periods, up to several months. Smoking is not applied and acidulation to final pH values above 5 is slower. Shelf life is mainly determined by drying and lowered water activity. Both Northern and Mediterranean products are characterised by specific flavours and safety risks. The industry is obviously interested to understand the control mechanisms affecting flavour development and safety risks. Therefore, the European Research Project 'Control of bioflavour and safety in Northern and Mediterranean fermented meat products' (FAIR-CT97-3227) was initiated. The project was a continuation of an earlier one (AAIR-CT94-1517), during which the relative importance of endogenous and microbial metabolism during sausage fermentation was established and factors affecting microbial amine production were investigated.

Objectives

The project aims to achieve the following objectives:

- Relationship between type of FMP and the presence of specific flavour compounds and undesirable compounds;
- Relationship between typical sausage flavour(s) and the presence of specific chemical compounds;
- Improved starter strains for Northern and Mediterranean type of FMP to improve flavour, to reduce undesirable properties and to reduce the process time of FMP;
- Better control of the formation of bioflavour and undesirable compounds by a better control of raw materials, additives and process conditions in both Northern and Mediterranean type of FMP.

In the first stage of the project, FMP at the end of the production process have been focused on in order to find a relationship between process conditions and raw materials used at one side, and the quality of FMP at the other.

In a second step, the formation of relevant compounds will be investigated in *in vitro* meat model and sausage model systems, simulating the meat fermentation process. The metabolic pathways of relevant lipid and protein derived compounds will be further studied.

In the last stage, the obtained results will be implemented in pilot plant studies, using modified technologies and ingredients, resulting in the optimisation of the production process of FMP.

Results

Results of the project are shown in different posters, presenting work of several partners involved in the project. A flow-chart of information obtained by the different tasks in the project is given in Fig. 1.

In general, it can be expected that both consumers and sausage producers can benefit from the acquired knowledge and results obtained by the project. The implementation of this knowledge may lead to:

- Better products with higher and/or better standardised quality, flavour and safety through a better understanding and a better control of dry sausage metabolism.
- Products with equal quality and safety obtained by a reduced maturation time, while a minimal level of quality, flavour and food safety is kept at the same time.

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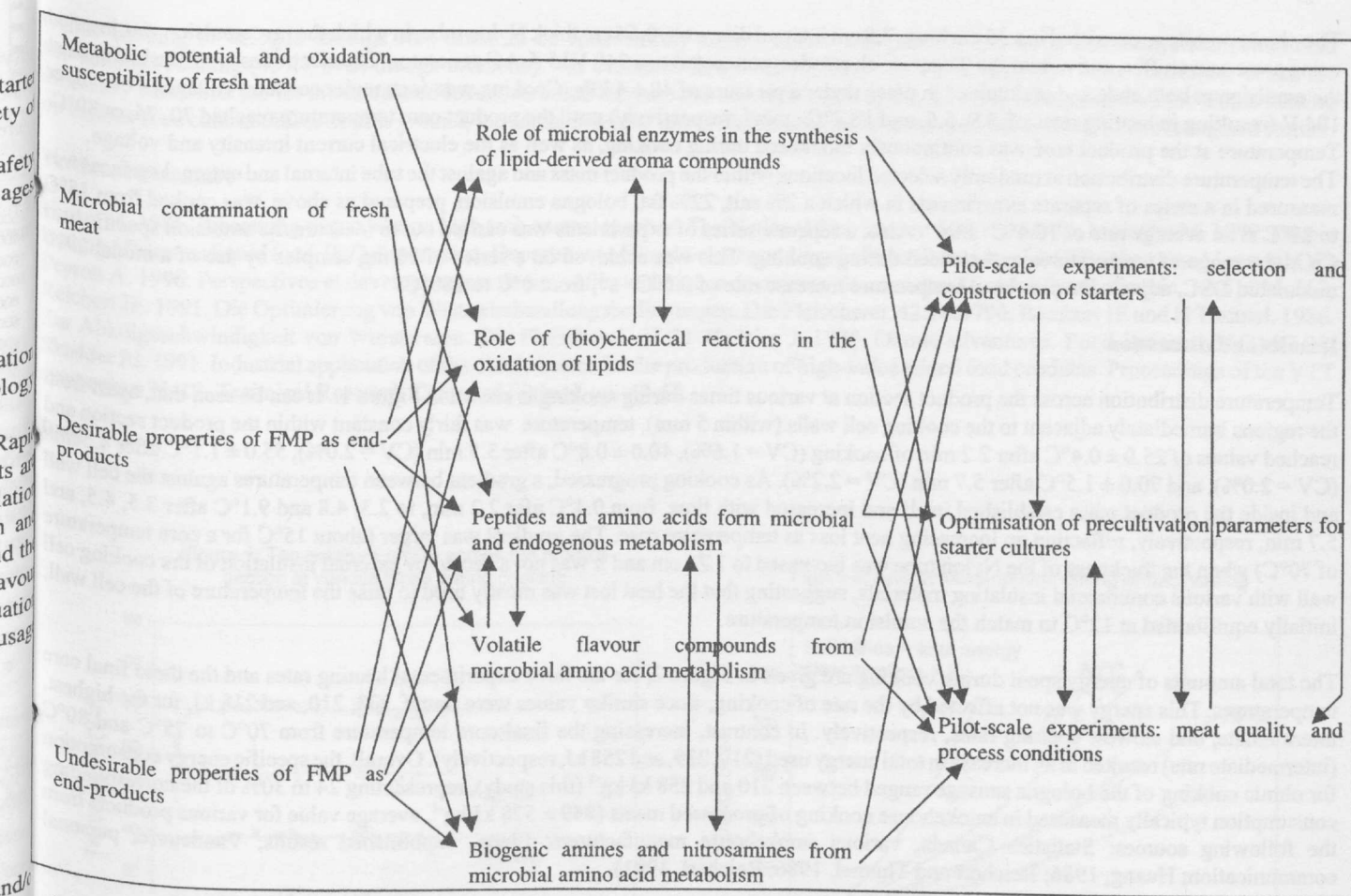


Fig. 1. Flow-chart of information obtained by different tasks in the project