Centro Tecnológico Nacional de la Conserva y Alimentación

Satiety Control Through Food Structures Made by Novel Processing:

Generating Novel Food Structures to Aid Consumer Weight Management

Satin
Satiety Innovation

Dra. Presentación García Gómez
Technology Area CTC

Murcia 14th of May

Funded by the 7th Framework Programme of the European Union, FP7 – Knowledge based Bio-Economy (KBBE)

STRUCTURE

- **INTRODUCTION**
- **OBJECTIVES**
- **TASK WP2**
- **CTC PRODUCTS PORTFOLIO**

EU Call: Project Objectives

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1. Develop food products that help regulate food intake by accelerating satiation during a meal, enhancing satiety, and/or reducing appetite.
2. Use novel processing methods and guarantee food safety.
3. Efficiency has to be proven in human trials against biomarkers of satiety and/or appetite.
4. The effect on nutrient bioavailability has to be measured.
5. Multidisciplinary collaboration in food processing, nutrition and consumer science with food producing enterprises will be instrumental.

KBBE.2011.2.3-04: Satiety control through food structures made by novel processing

Call: FP7-KBBE-2011-5

The aim of this topic is to develop food products that help regulate of food intake by accelerating satiation during a meal, enhancing satiety, and/or reducing appetite. The approach to food development should use novel processing methods and guarantee food safety. The efficiency of the foods developed to satiate and/or reduce appetite has to be proven in human trials against biomarkers of satiety and/or appetite. The effect of the modified food structure on nutrient bioavailability has to be measured. Multidisciplinary collaboration by researchers in food processing, nutrition and consumer science with food producing enterprises will be instrumental in reaching the objectives of this topic.

Funding scheme: Collaborative Project (large-scale integrating project targeted to SMEs)

Additional eligibility criteria:

- The requested European Union contribution shall not exceed EUR 6 000 000.
- SME-targeted Collaborative Projects will only be selected for funding on the condition that the estimated EU contribution going to SME(s) is 35% or more of the total estimated EU contribution for the project as a whole. *This will be assessed at the end of the negotiation, before signature of the grant agreement. Proposals not fulfilling this criterion will not be funded.*

Expected impact: The European added value lies in enhanced innovation capacity in the field of novel processing, broader application of the relevant technologies by the food industry, and improved competitiveness of the European food industry. The expected project results should clearly be of interest and potential benefit to SMEs. A strong participation of SMEs in the project itself should help contribute to the realisation of that benefit. The development of food products for the control of satiety and/or appetite forms part of preventive strategies to reduce the burden of chronic disease among the European population. The research will contribute to European health policy, in particular the strategy for Europe on nutrition, overweight and obesity-related health issues. New and/or improved food products of high quality and safety will enlarge the range of processed foods in order to help consumers achieve a balanced diet.

The Consortium

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BioActor
AXXAM
CTIC Centro Tecnológico Nacional de la Conserva y Alimentación
ProDigest
ctaex
RTD Services
NIZO YOUR FOOD RESEARCHERS

beneo
gsk
KEMIN
Kellogg's
SENSUS
Fonterra
Dairy for life
kraft foods

UNIVERSIDAD DE MURCIA
Rowett Institute of Nutrition and Health
UNIVERSITAT ROVIRA I VIRGILI
UNIVERSITY OF LEEDS
Karolinska Institutet

Coca-Cola Europe
Juver
Cargill
NATUREX

Aim

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The SATIN consortium aims to develop novel food products for European consumers through processing innovation that will enhance satiety and help to achieve a balanced diet.

The multidisciplinary collaboration will develop food products that help regulate food intake by accelerating satiation during a meal, enhancing satiety and/or reducing appetite through novel processing methods and validate these products in human trials by examining key biomarkers, nutrient availability and behaviour.

Objectives

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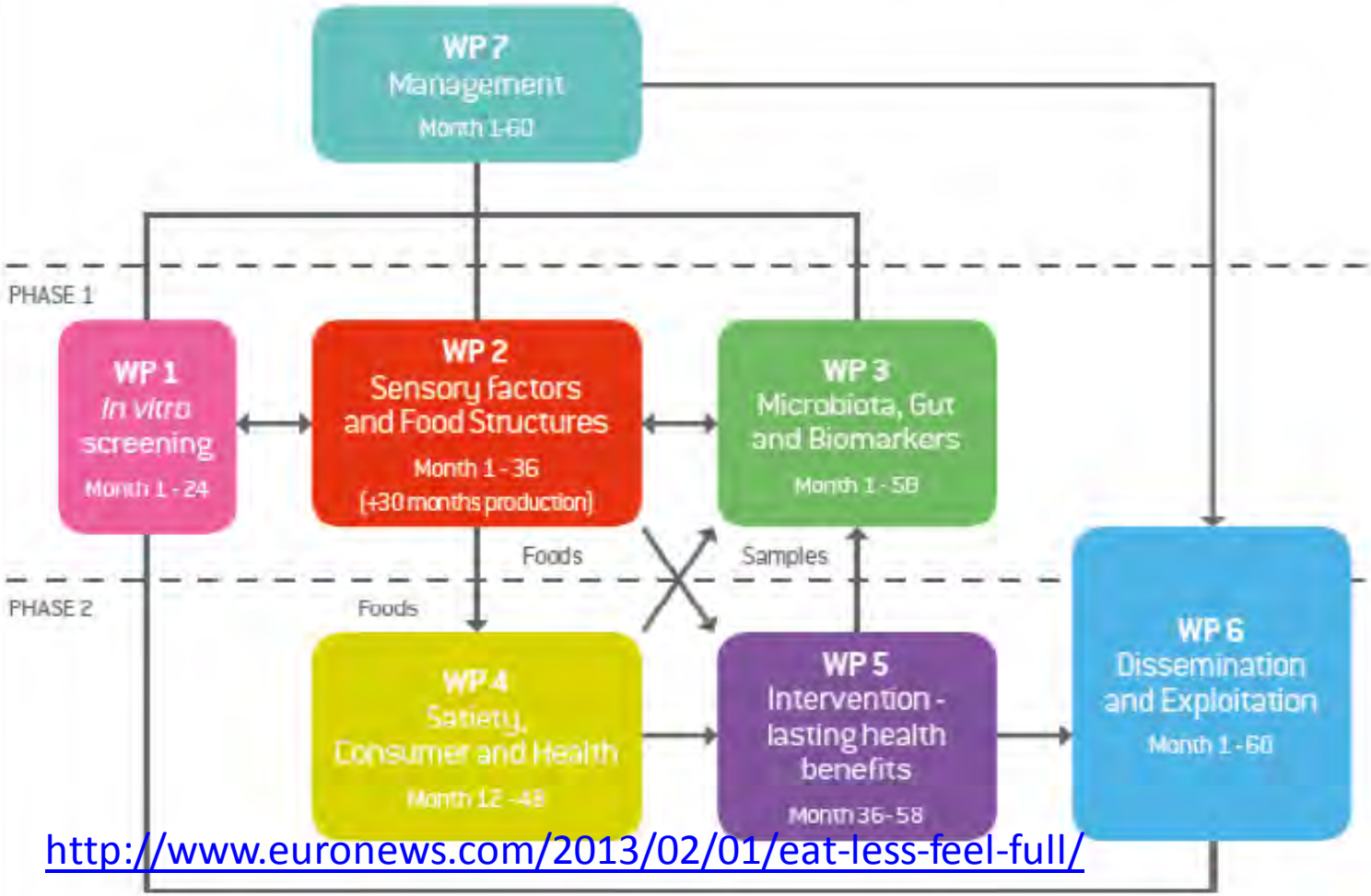
1. Integrate advanced technologies to screen novel food structures through in vitro models to isolate and refine products according to their satiating potential.
2. **Develop novel food processing technologies** that combine active ingredients and changes in food structure to produce a range of novel satiety enhancing ingredients.
3. **Produce finished food products** that pass through safety analysis, early sensory evaluation and consumer testing.
4. **Demonstrate the effects of prototype products** on biomarkers of satiety and on nutrient bioavailability using in vivo studies and validating new in vivo approaches.
5. Demonstrate the effects of final food products on within-meal satiation, post-meal satiety and/or reduced appetite using biomarkers of satiety.
6. Demonstrate the enduring effects of individual food products on satiety and their potential to induce weight loss.
7. **Demonstrate the long-term consumer and health benefits** of adhering to a diet containing satiety-enhancing products.
8. Validate health claim endpoints and commercialisation opportunities.

WORK PACKAGE INTERRELATION



http://www.euronews.com/2013/02/01/eat-less-feel-full/

WP2: Sensory factors and food structures in satiation and satiety

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WP2 OBJECTIVE AND PARTNERS

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OBJECTIVE
The aim of this WP is to develop novel food processing technologies that combine optimised food structures with active ingredients that are able to enhance satiation/satiety

SPECIFIC OBJECTIVES
2.1 To enhance the satiating potential of existing whole foods (natural raw materials) through the use of specific Processing techniques.
2.2 To manufacture attractive and tasty foods/ drinks to enhance satiation/ satiety through the presence of appetite regulation ingredients derived by specific processing techniques.

COMMERCIAL PARTICIPANTS

NIZO food research
ctaex
BioActor
CTC Centro Tecnológico Nacional de la Conserva y Alimentación
Coca-Cola Europe
Juver
Cargill

CTC OBJECTIVE

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DEVELOPMENT OF MEAT AND FISH FOOD WITH SATIATING INGREDIENTS

TASK WP2: Sensory factor and food structures in satiation and satiety

- **Task 1**: Modification of natural raw materials (meat and fish) through the use of processing techniques
  (months 1-24)

- **Task 2:** Assessment of sensory satiation and early satiety effects of modified existing whole foods by NIZO
  (months 13-36)

- **Task 3:** Application of various potential satiating/ satiety enhancing ingredients in meat and fish products
  Fish and meatballs: Viscogum (Locust Bean Gum) and C Actistar 11700 (Tapioca resistent Starch) from Cargill
  Fish and meat soups: Bean extract, Curcumine and Soy extract from Naturex
  (months 24-36)

- **Task 4:** Production of Fishball (placebo and Viscogum) for human intervention studies in WP4 and WP5
  (months 36-54)
  Current status: ongoing

Task 1 and Task 3: Concept creation (CTC)

Restructured foods:
Products elaborated by means of a method to transform lower value cuts and quality trimmings into products o higher value. Products are shape restructuring.

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MEAT / FISH BALLS

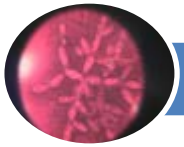

MIXING INGREDIENT


MAKING AND FRYING BALLS

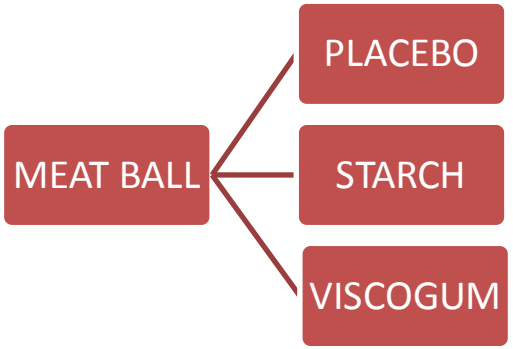

ADDING SAUCE

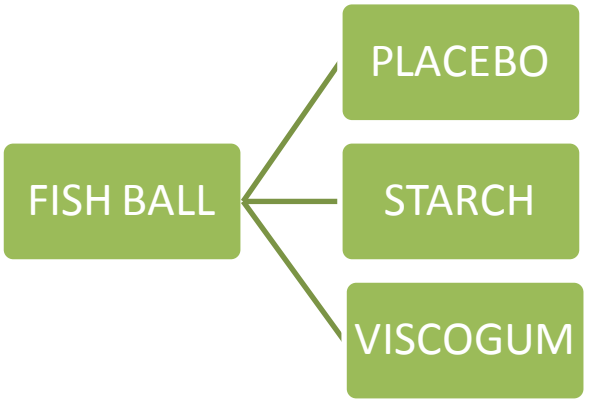

PACKAGING AND SEALING


STERILISING IN A RETORT (F_0 VALUE $\geq$ 10 min)


MICROBIOLOGY AND NUTRITIONAL TEST AND SENSORIAL ANALYSYS

SAMPLE





Lunch/Dinner eating ocasion, once a week

Task 1 and Task 3: Concept creation (CTC)

Clear soups
A richly flavoured low fat broth made of fish, meat, poultry and/or vegetable stock that has been clarified. Products are fat content reduction

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MEAT / FISH CLEAR SOUP


COOKING INGREDIENT


SEPARATING FAT (FILTRATION/CENTRIFUGATION)


ADDING SATIATING INGREDIENTS


PACKAGING AND SEALING


STERILISING IN A RETORT (F0 VALUE ≥ 5,9 min)


MICROBIOLOGY AND NUTRITIONAL TEST AND SENSORIAL ANALASYS

Dinner eating ocasion, three times a week

SAMPLE

MEAT CLEAR SOUP
- PLACEBO
- BEAN EXTRACT
- SOY EXTRACT
- TURMERIC

FISH CLEAR SOUP
- PLACEBO
- SOY EXTRACT
- TURMERIC

Task 1 and Task 3: Concept creation (CTC)

Clear soups
A richly flavoured low fat broth made of fish, meat, poultry and/or vegetable stock that has been clarified. Products are fat content reduction

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Checked on products:

- Oral sensory acceptance
- Food Safety
- Allergen profile

Task 2: Sensory satiation and early satiety (NIZO)

OBJECTIVE: Assessment of sensory satiation and early satiety effects of modified existing whole foods (by NIZO).

CONCLUSIONS meat and fishballs and soups conducted that the best options to select were Fishball and Fish soap with Viscogum (Locust Bean Gum E 410)

Picture of meat and fish products

CTC Product portfolio

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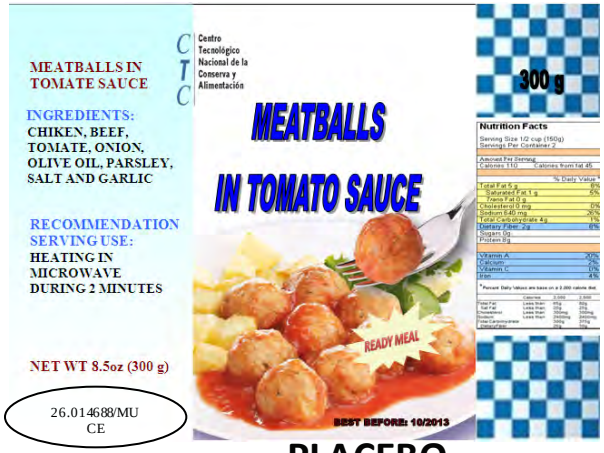
MEAT BALLS



PLACEBO

STARCH

VISCOGUM

FISH BALLS

PLACEBO

STARCH

VISCOGUM

CTC Product portfolio

MEAT CLEAR SOUP

FISH CLEAR SOUP

WP2: Sensory factor and food structures in satiation and satiety

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THANK YOU FOR YOUR ATTENTION

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