

Designed Energy Smoothie for Elderly

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Background

The ageing population is rapidly growing. People live longer and in order to fulfil the WHO device "add life to years" different types of preventive actions are to be taken in order to make the longer lives also to become healthier lives. Malnutrition is common in older ages due to many different factors, e.g. dysphagia and reduced abilities of tasting and smelling. In order to avoid malnutrition, nutritionally targeted supplements to the daily intake are needed for risk groups among the elderly. Mainly proteins and energy enrichments, but also vitamins, antioxidants etc., are of importance.

Aim

The aim was to develop healthy and well tasting energy smoothies for seniors based on fruit and berry juice enriched with proteins and oil.

Material and Methods

Smoothies based on locally produced apple, black currant and strawberry, with addition of vegetable proteins and rape seed oil, were produced according to a creative design where the proportions of the ingredients were varied systematically.

Creative Design

1. The first step was to identify the main features of the products to be developed:

- Smoothie based on fruits and berries
- Increased protein content by addition of high quality vegetable protein
- Increased energy content by addition of high quality oil
- Tasty and well accepted by senior consumers

2. The second step was to identify experimental factors (figure 1):

- Protein content
- Flavour

3. The third step was to create the recipes:

- 65-75% fruits and berries
- 15% rapeseed oil
- 7-9% soy protein
- 3.0% sucrose
- 1-2% ascorbic acid

Analyses:

Taste acceptance and ease of swallowing were evaluated by a consumer panel consisting of seniors. Further analyses of pH, water activity, nutritional contents and bioactive components were performed.



Results and Discussion

Preliminary results showed that all products were well accepted. However, swallowability varied due to protein content, where an increased protein content increased viscosity and perceived thickness of the products. The nutritional composition showed increased energy content, almost similar between products. Amount and quality of the added fatty acids correlated well with needs of older age groups. The added soy-protein contained such levels of branch-chained-amino acids to make this to a an interesting alternative for substitution with animal protein. Soy protein have been shown to enhance whole-body protein synthesis in healthy seniors, thus interesting to be further investigated in frail elderly. Checking the contents of vitamins and minerals it can be seen that e.g. the contents of vitamin C and potassium were very high in the black currant smoothie. Also the fibre content was doubled in this products compared to the others.

Analyses of bioactive compounds will add to the healthiness of the products, eg polyphenolic substances etc. Further the pH of all products were below pH 4, indicated a microbiologically safe product.

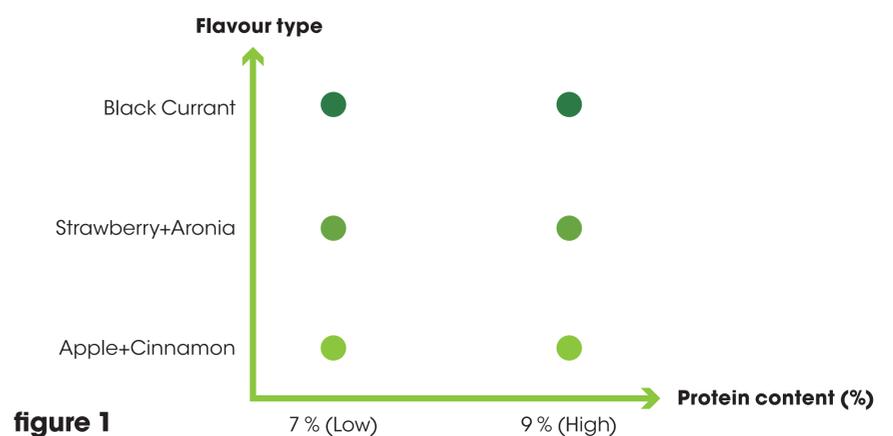


figure 1

This study is one part of a larger project with focus on the whole value chain, from producer via production and procurement, to the intake of a well tasting and nutritious drink designed for the elderly. The project involved representatives of the various links in the chain to allow for discussion and solutions from a holistic perspective

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