Development of sunflower seed based milk analogue

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INTRODUCTION

In today's world, plant-based milk alternatives are a rising trend. The majority of these milk alternatives lack nutritional balance when compared to bovine milk but they contain functionally active, health promoting components. Therefore, the challenge for the future is to select the most valuable raw materials to produce a milk analogue with a nutritional profile and organoleptic properties very similar to milk.

OBJECTIVE

The key ojective of our study was to understand the effect of the two different milling processes and roasting on the nutritional and organoleptic properties of sunflower based beverages.

MATERIALS AND METHODS

Two types of preparation method (filtration after wet milling and dry milling) were used in developing sunflower seed milk analogue. Main raw materials were unroastedand slightly roasted sunflower seeds. Roasting was done by visual inspection. The amino acid composition were determined by Ingos 400 Automata Amino acid Analyser and their total protein content by Kjeldahl method (ISO 8968).



In the sensory test, panellists evaluated the overall acceptability of each sample and JAR levels for the product attributes.

A Rancimat test was used in this study to measure the oxidative stability of final products by measuring cold-pressed sunflower seed oils.

RESULTS AND DISCUSSION

Sunflower protein products are deficient in lysine (wet milling: 0.65 mg/g protein; dry milling: 1.24 mg/g protein), isoleucine (wet milling: 0.44 mg/g protein ;dry milling: 1.19 mg/g protein) and cystein (wet milling: 0.27 mg/g protein; dry milling: 0.61 mg/g protein).

Sample preparation method had an effect on the total protein content of the samples (seeds: 41.1 g/100 g). In the case of the dry milling preparation, protein values were higher (milk alternative after wet milling: 4.53 g/110 g; after dry milling: 1.93 g/100 g).

The Rancimat tests were carried out with 3.00±0.01 g of oil at 120 °C and with an air flow of 15 l/h. Analysed coldpressed oils' oxidative stability in Rancimat was shorter (2.52 h) compared to the result obtained for HOSO by Matthäus (2006).



Figure 1: Essential amino acid profile of milk analogs

<u>CONCLUSION</u>

Results indicate that dry milling process has positive impact on the essential amino acid profile of sunflower seed drinks. On the other hand, the yield of this process was lower. There were no significant differences ($P \ge 0.05$) between the total protein content of unroasted and roasted samples. The overall acceptability of the dry milled products were the best based on JAR test.

LITERATURE

Matthäus, B. (2006) Utilization of high-oleic rapeseed oil for deep-frying of French fries compared to other commonly used edible oils, European Journal of Lipid Science and Technology, 108(3):200 - 211

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