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4-9 November 2008 • Ljubljana, Slovenia

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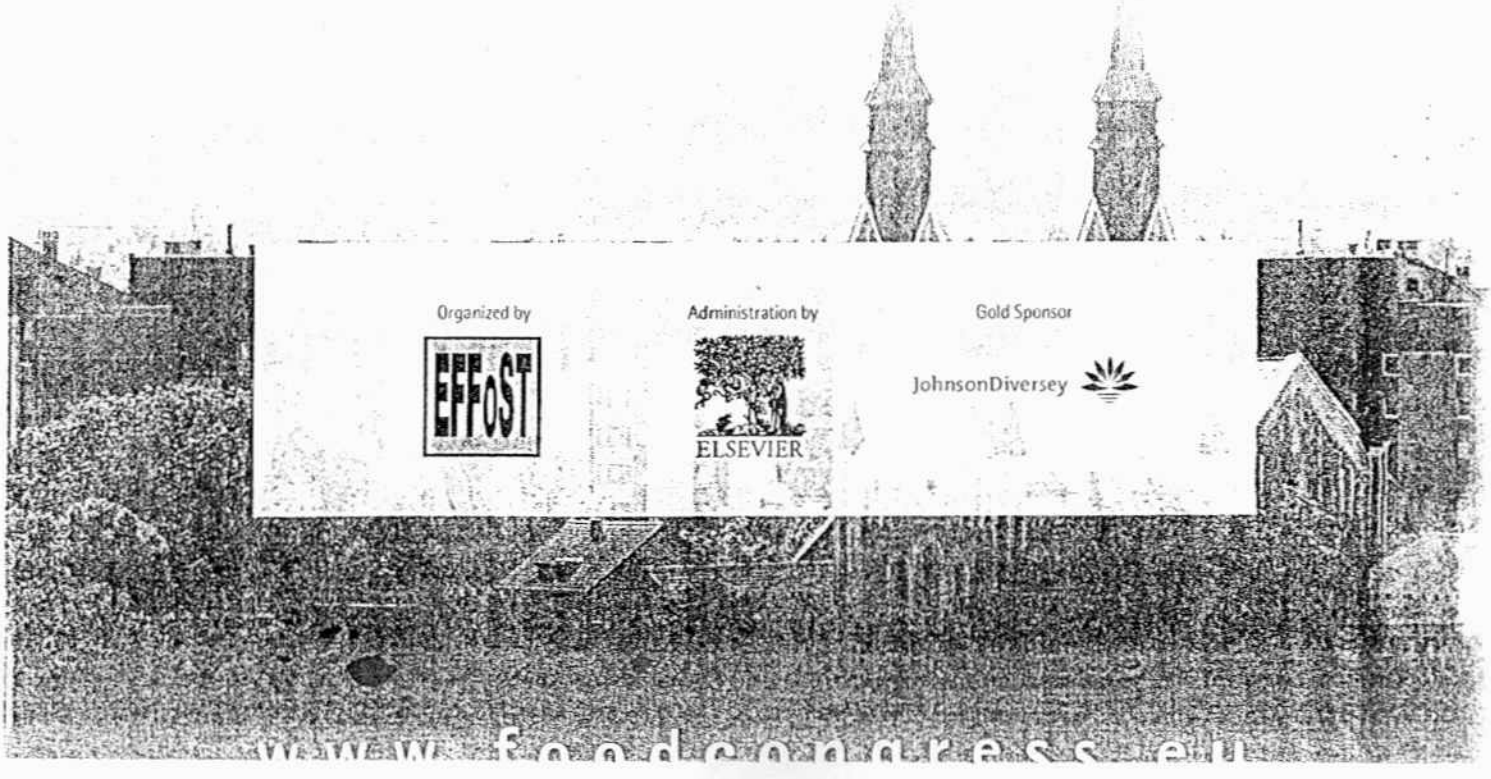

Usage of Cantaloupe Seed Waste to Produce a Novel Beverage and its Nutritive Value

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Introduction

In developing countries, the cost of milk and milk products are prohibitive (2). Cantaloupe (*Cucumis melo* L.) belongs to *Cucurbitaceae* family and is native to Africa and Asia. The seeds of cantaloupe, however, are not much consumed. In some countries, their kernels are used as a dressing for breads, cakes, confectionery and snack foods, often instead of almonds and pistachios (1,5). In this study, it was shown that melon seeds can be substituted as an alternative to soybean for milk preparation. It is expected that the milk would improve the protein supply in developing countries and alleviate some of the nutritional problems caused by inadequate protein intake (1,5,6).

Materials & Methods

Cantaloupe (*Cucumis melo* L. var. til) seeds and sugar were purchased from a local market in Mashhad. The seeds washed with water containing 5% Benzo alkoniumcloride, then sun-dried (36-48 hour) and were kept in jute-bags.
Moisture, proteins (N×6.25), fat, ash and carbohydrate were determined according to AOAC (1990) (4). Sodium and potassium were measured by Flame photometer (JENWAY, Clinical PFP7 model). Other mineral contents were determined using Atomic Absorption Spectrophotometer method.
The experiments were conducted as a factorial with completely randomized design. Analysis of variance and Duncan Multiple Range Test were used to analyze data for significant differences between means ($p<0.05$).

Cantaloupe Seed Milk Production

The sun-dried cantaloupe seeds were soaked in water at 80-90 °C for 30 min (2). The seeds were passed through sieve and ground by hammer miller to turn into paste. The paste blended with boiled water at 1:8 (paste/water) ratios (6), 17% sugar and 0.15% CMC (according to the results obtained from pre-treatments) in a Kenwood food processor (model 49074, UK) at high speed for 2 min. The resulting slurry was filtered through a double folded muslin cloth. By this way, cantaloupe seed milk was obtained. Beverage samples were stored in sterile bottles in 3 replicates at refrigerator (4 °C) temperature.

Results & Discussion

The chemical analysis results of cantaloupe seed and cantaloupe seed beverage are presented in table 1 and 2.

Conclusion

The extension of dairy substitutes in developing countries must be given greater emphasis. From the analysis performed in this study, cantaloupe seed beverage can be considered as a good source of protein, phosphorus, potassium and sodium.

References

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Table 1- Composition of the cantaloupe seed and cantaloupe seed beverage

	Cantaloupe seed (gr/100gr dry material)		Cantaloupe seed beverage (gr/100gr beverage)
Constituent	**Seed kernel**	**Whole seed**	
Moisture	3.9 ± 0.05	4.5 ± 0.08	78.9 ± 0.50
Carbohydrate	13.0 ± 0.00	33.9 ± 0.00	17.21 ± 0.00
Protein	28.62 ± 0.50	21.11 ± 0.45	1.52 ± 0.11
Fat	49.70 ± 0.75	36.72 ± 0.59	2.15 ± 0.09
Ash	4.812 ± 0.10	3.821 ± 0.09	0.215 ± 0.02

Means of 3 replicates ± standard deviation.

Table 2- Micro-nutrient contents of the cantaloupe seed and cantaloupe seed beverage

	Cantaloupe seed (*ppm*)		Cantaloupe seed beverage (*ppm*)
Micro-nutrient	**Seed kernel**	**Whole seed**	
Sodium	46.82 ± 3.22	34.13 ± 3.01	8.00 ± 1.09
Potassium	25.33 ± 1.25	25.53 ± 1.02	14.00 ± 1.9
Magnesium	0.832 ± .01	0.751 ± .02	-
Iron	2.407 ± .02	2.439 ± .03	0.612 ± 0.02
Copper	0.315 ± 0.01	0.540 ± 0.02	0.062 ± 0.01
Calcium	-	-	13.90 ± 1.23
Phosphorus	-	-	60.50 ± 2.11

Means of 3 replicates ± standard deviation.

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Casein Glycomacropeptide Hydrolysates via *Cynara cardunculus* Extract - Potencial Prebiotic Effects

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Biologically active peptides are of particular interest to food science and nutrition — as they have been shown to play physiological roles upon ingestion. Peptides — hidden or inactive in the amino acid sequence of dairy proteins can be released or activated *in vivo* during gastrointestinal digestion — or upstream during food processing, via specific, enzyme-mediated proteolysis.

The colonic microflora is particularly important to one's health. Growth and metabolism of many bacterial species inhabiting the large bowel depends primarily on the substrates made available to them — most of which come directly from the diet. One such nutritional substrates is prebiotics, which are non-digestible food ingredients, than can selectively stimulate of growth or activity lactobacilli or bifidobacteria in the colon.

An emerging research trend has focused on recovery/synthesis (and characterization) of peptides bearing biological activity — via their impact on human health as well their impact on the aforementioned colonic microflora. To achieve any practical, useful effect, inclusion in specific food matrices as vectors (which would accordingly become functional foods) is in order. One the other hand, κ-casein glycomacropeptide (GMP) — one of the main components of cheese whey, is produced to large extents during cheese making, and has already been claimed as mediator of important biological activities.

The main objective of this research work was thus to study the prebiotic activity of extracts enriched in peptides obtained via hydrolysis of GMP from cow milk brought by cardosins present in *Cynara cardunculus* aqueous extract — towards eventual incorporation in foods. GMP without hydrolysis, as well as the peptide extracts (total and < 3000 Da fraction) exhibited prebiotic activity upon *Lactobacillus acidophillus* (Ki), *in vitro*; promotion of prebiotic growth was stronger when the concentration of the <3000 Da fraction was higher.

Keywords: Casein Macropeptide, Biopeptides, Cynara cardunculus, prebiotic effect

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Usage of Cantaloupe Seed Waste to Produce a Novel Beverage and its Nutritive Value

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A beverage from cantaloupe (*Cucumis melo* L.) seeds was produced to make a waste product available for human consumption. In this study, a novel beverage was made. moisture, carbohydrate, fat, protein, ash, some minerals include sodium, potassium, phosphors, calcium, iron and copper analysis were conducted to determine the nutritional value of the beverage, following a consumer panel test to evaluate its acceptability. The results showed that cantaloupe seed beverage was a good source of protein (1.52%), fat (2.15%), phosphors (41.3 *ppm*), potassium (17.0 *ppm*) and calcium (9.2 *ppm*). The overall acceptability score indicated the beverage was liked very much (4.05 on a 5-point hedonic scale).

Keywords: Cantaloupe seed, Extract, Nutritive value, Cucumis melo L.