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Research Article

Preparation and Sensory Evaluation of Quinoa based Dairy Beverage

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Abstract

Quinoa based diary beverage is ready to drink product. It is a wholesome thirst-quenching and high energy drink with reduced calorie content due to use of artificial sweetener. It is highly nutritive product meant for all age groups. Long shelf life is obtained by sterilization process which reduces microbial load to a minimal level and could be stored for a longer duration. Quinoa is rich source of proteins (sulphur amino acids and lysine). Protein deficiency can be overcome by addition of Quinoa, which is rich in proteins. Finally obtained product is kept for sensory evaluation by using nine-point hedonic scale.

Keywords: Quinoa flour/malt; Sensory Evaluation; RTS beverage

1. Introduction

Quinoa (Chenopodium quinoa Wild.) plant belongs to the Chenopodiaceae family, which also includes spinach and beet. There are approximately 250 species of this family all over the world and it is an endemic plant peculiar to South America. The main carbohydrate component of quinoa is starch, and it constitutes 52% to 69% of it. Its total diet fibre is close to that in grain products (7% to 9.7%) while its soluble fibre content is known to be in the 1.3% to 6.1% band. Due to the quality and quantity of its lipid fraction, quinoa is accepted as an alternative oil seed. It has an oil rate of 2.0% to 9.5%, and is rich in terms of essential fatty acids such as linoleic and alpha-linolenic acids. It contains antioxidants like alpha and gamma tocopherol in high concentrations [1-3].

2. Method of Product Manufacture

2.1 Ingredients to be used

1. Double toned milk

2. Quinoa flour/malt
3. Cocoa powder
4. Sweetener.

2.2 Formulation

Ingredients	**T_0**	**T_1**	**T_2**	**T_3**	**T_4**	**T_5**
Double toned milk	100 ml	100 ml	100 ml	100 ml	100 ml	100 ml
Quinoa flour/Malt	0.5 grams	1 gram	1.5 grams	2 grams	2.5 grams	3 grams
Cocoa powder	1 gram	1 gram	1 gram	1 gram	1 gram	1 gram
Sweetener	2 grams	2 grams	2 grams	2 grams	2 grams	2 grams

Table 1: Ingredients.

2.3 Processing of Quinoa flour or malt

Quinoa seeds

↓

Washing for 5-7 times with water

↓

Soak for 4 hours in fresh water

↓

Drain water, which is excess

↓

Tie it in a muslin cloth and leave it for 24 hours

↓

Dry it in shade for 2 days

↓

Weigh and Grind

↓

Sieve it to get uniform particle size

Figure 1: Processing of Quinoa flour or malt.

2.4 Flow chart for the preparation of the product

Procurement of all the ingredients

↓

Quinoa powder sieved (0.5%, 1%, 1.5%, 2%, 2.5%, 3%)

↓

Addition of cocoa powder (1%)

↓

Addition of sugar (2%)

↓

Addition of milk (100%)

↓

Homogenisation (2 stage)

↓

Filling in glass bottles of 200mL quantity

↓

In-bottle sterilization (120°C/15 minutes)

↓

Cooling and storage (Room or refrigerated temperature)

To be served at refrigerated temperature.

Figure 2: Preparation of Quinoa based RTS dairy beverage.

3. Results and Discussion

Quinoa based RTS dairy beverage from different mixtures of Quinoa powder, Cocoa powder and double toned milk is subjected to sensory evaluation and scores are recorded for different parameters are presented in Table 2 [4-6].

Treatments	Color and Appearance	Flavour	Consistency	Mouth feel	Overall Acceptability
T_0	8.33	7.8	8.35	8.01	8.12
T_1	8.34	8.9	8.66	8.27	8.54
T_2	8.23	8.23	8.28	8.16	8.22
T_3	8.18	8.20	7.21	8.04	7.91
T_4	8.16	8.10	8.01	7.90	8.04
T_5	8.13	7.89	7.99	7.60	7.90

Table 2: Sensory evaluation of five Quinoa based RTS dairy beverage.

3.1 Color and appearance

The mean color and appearance score for different treatments of Quinoa based RTS dairy beverage are ranged from 8.1 to 8.34. The treatment T_1 (8) is found to be significantly best of the rest of the treatments. It was observed that increase in the level of quinoa flour in the beverage decreases the score of color and appearance slightly (0-5).

3.2 Flavor

It is observed that the mean score for the flavor of Quinoa based RTS dairy beverage for treatments T_0, T_1, T_2, T_3, T_4 and T_5 are 7.8, 8.9, 8.23, 8.20, 8.1 and 7.89 respectively. The treatment T_1 is superior of T_0 to T_5 treatments. It is observed from above findings that 1 gram of Quinoa, 1 gram of cocoa, 2 grams of sugar and 100 ml of milk will give rich taste to the product.

3.3 Consistency

The mean score for the consistency attributes of Quinoa based RTS dairy beverage ranges from 7.21 to 8.66. The treatment T_1 (8.66) is significantly best over the rest of the treatments.

3.4 Mouth feel

The highest mouth feel score is observed for treatment T_1 (8.27) followed by T_2 (8.16), T_3 (8.04), T_0 (8.01), T_4 (7.9) and T_5 (7.6). 1-gram Quinoa malt or powder is most acceptable (T_1).

3.5 Overall acceptability

The mean score for treatment T_0, T_1, T_2, T_3, T_4 and T_5 are 8.12, 8.54, 8.22, 7.91, 8.04 and 7.90 respectively. The treatment T_1 (8.54) is most accepted by the judges. So, use of 1-gram Quinoa malt or powder is most acceptable than the other treatment combinations (0-5) [7-8].

4. Conclusion

Addition of Quinoa malt or powder into milk makes it more nutritious and also helps in improving and increase in the acceptability of milk by many people. The optimum amount of Quinoa malt or powder that can be used in the process of preparation of Quinoa based RTS dairy beverage is up to 1-gram.

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