

Value Addition of Chenopodium Quinoa, Blackberry (Juice, Powder, Pulp, Shreds), Bitter Melon and Red Wheat Flour to Develop Cookies for Diabetic Patients

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Abstract: The art of making cookies is that of turning simple ingredients into wonderful things. A cookie is a crisped baked product also known as a flat cake. Cookies making is a conventional activity in many parts of the country. Cookies are a food for all sections of the people across the broad varieties and shape. This research work aimed at preparation and Value addition of cookies produced from Chenopodium Quinoa, Red Wheat Flour, Blackberry, Bitter Melon. Sensory evaluation carried out by semi trained panel to find consumer acceptability for the product. After analysis it has been found that value addition of Chenopodium Quinoa, Red Wheat Flour, Blackberry, Bitter Melon cookies have high protein content, low sugar content, high fibre, minerals and vitamin content which will be useful to overcome diabetic patients.

Keywords: Bitter melon, Blackberry, Chenopodium Quinoa, Diabetic.

1. Introduction

A cookie is a baked or cooked food that is typically small, flat and sweet. It usually contains flour, sugar and some type of oil, fat or butter. Presently value addition of cookie with Chenopodium Quinoa, Blackberry, Bitter Melon and Red Wheat Flour are not available in the market. A reason for this cookie preparation is for diabetic patients, high nutritive value and many health benefits. Chenopodium Quinoa is a rich source of protein, fat, carbohydrate, vitamins and minerals. Blackberry is a good source of vitamins, dietary fibers and minerals. It contains alkaloid which are effective in controlling hyper glycaemia or high blood sugar. Bitter melon is responsible for the treatment of diabetes, enhance glucose uptake by adipose or muscle tissue. It also inhibits glucose absorption from intestine and glucose production from liver. Bitter Melon is a rich source of bioactive chemicals, vitamins, minerals and antioxidants. Red wheat flour is an excellent source of proteins, dietary fibers, minerals which are necessary for proper metabolism and

overall health. So, the prepared cookies are best suited for diabetic patients.

2. Nutritional Information

A. Composition of the Blackberry (Jamun)

Table 1

Nutrient	Quantity
Water (g)	88.20
Protein (g)	1.39
Carbohydrate (g)	9.61
Energy (kcal)	43.00
Total lipids (g)	0.49
Total fiber (g)	5.30
Total sugars (g)	4.88

(1) (PDF) The Blackberry Fruit: A Review on Its Composition and Chemistry, Metabolism and Bioavailability, and Health Benefits | Lydia Kaume - Academia.edu

Jamun fruit is universally accepted to be very good for medicinal purpose especially for curing diabetes because of its effect on pancreas.



Fig. 1. Blackberry (Jamun)

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B. Red Wheat is a good balance diet source



Fig. 2. Red Wheat

C. Composition of the Red Wheat Flour

Table 2

Nutrient	Quantity
Protein (g)	12.1
Fat (g)	1.7
Mineral (g)	2.7
Fiber (g)	1.9
Carbohydrate (g)	69.4
Calcium (mg)	48
Phosphorous (mg)	355
Iron (g)	4.9

D. Chenopodium Quinoa

Quinoa is highly nutritious due to its outstanding protein quality and wide range of minerals and vitamin. It is gluten free flour and have low glycemc index.



Fig. 4. Bitter melon (Karela)

F. Stevia Powder

Stevia sweeteners do not contribute calories on the diet. They have also demonstrated no effect on blood glucose or insulin response. This allows people with diabetes to use it in place of sugar. Stevia extracts are believed to dilate blood vessels that increase the sodium excretion and output of urine. This could help in lowering the blood pressure and regulating the heartbeat. It does not cause any allergy.

3. Objective

With rapid urbanization, increase in standard of living increase in per capita income and the changing lifestyle and demands of consumers it is observed that consumers are moving towards ready to eat products hence our main objective is to make such innovative product which would be tasty, nutritionally rich and beneficial for diabetic people as well.

Table 3

Ingredients	Sample 1	Sample 2	Sample 3	Sample 4
Red Wheat Flour	80 g	70 g	60 g	50 g
Quinoa Flour	20 g	30 g	40 g	50 g
Butter	50 g	50 g	50 g	50 g
Jamun Pulp	15 g	15 g	15 g	15 g
Jamun Powder	15 g	15 g	15 g	15 g
Jamun Shreds	7 g	7 g	7 g	7 g
Stevia Powder	40 g	40 g	40 g	40 g
Bitter melon Powder	2 g	2 g	2 g	2 g
Baking Powder	1 g	1 g	1 g	1 g
Jamun Juice	20 ml	20 ml	20 ml	20 ml

Table 4

Samples	Colour	Taste	Flavour	Texture	Appearance	Overall Acceptability
Sample 1	6.5	7.0	6.5	7.0	7.5	6.9
Sample 2	8.5	8.0	7.5	8.0	8.0	8.0
Sample 3	8.0	7.5	7.5	8.0	7.5	7.7
Sample 4	6.5	7.5	7.0	7.5	7.0	7.1



Fig. 3. Quinoa Seed

E. Bitter melon

Bitter melon is one of the most commonly used vegetable that contain polypeptide-p and is used to control diabetes naturally.



Fig. 5. Cookies

4. Table showing requirements for formulation of cookies

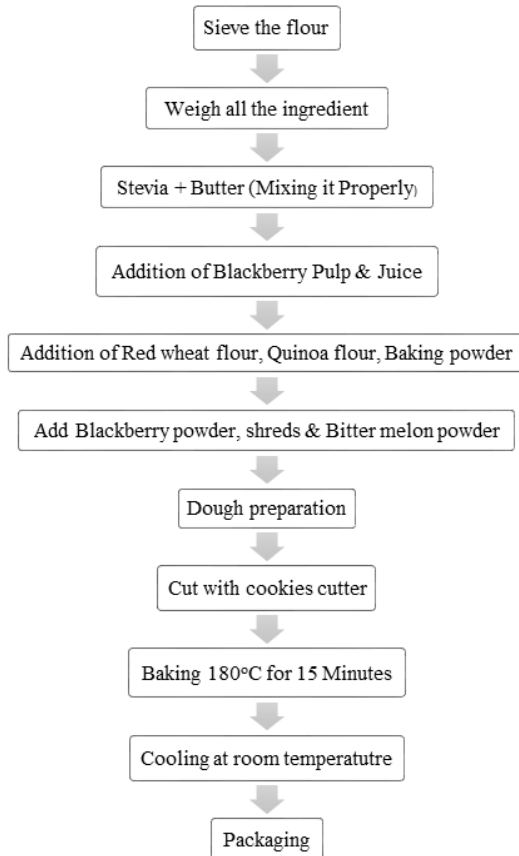
Table 5

Chenopodium Quinoa Flour
Red Wheat Flour
Blackberry Pulp
Blackberry Juice
Blackberry Powder
Blackberry Shreds
Bitter melon Powder
Stevia Powder
Baking Powder
Butter
Baking Oven

5. Cookies are formed with variations as given in the following table

Cookies were prepared from Red Wheat Flour, Quinoa, and Bitter melon, Blackberry, Baking Powder and Butter Using following Preparation.

6. Methodology



7. Sensory Evaluation of Cookies

Sensory evaluation of cookies for color, taste, flavor, texture, appearance, and overall acceptability were carried out using 9-point hedonic scale with semi-trained panelists. Sensory attributes were rated on a scale of 1 (dislike extremely), 9 (like extremely). (Kramer. Book of Quality Control)

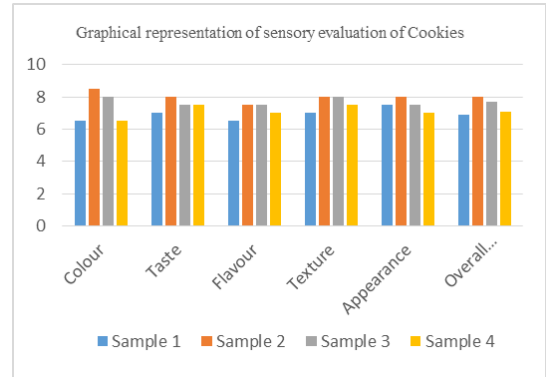


Fig. 6. Graphical representation of sensory evaluation of cookies

8. Result and Discussion

In the formulation of value addition cookies, it is interesting to see that protein, fibre, vitamin content is increased and sugar content is lowered as compare to control, having the health benefits. Consumption of these cookies will useful to diabetic patients.

9. Conclusion

This paper presented an overview of Value addition of chenopodium quinoa, blackberry (juice, powder, pulp, shreds), bitter melon and red wheat flour to develop cookies for diabetic patients.

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