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RESEARCH ARTICLE

Designing of Low GI biscuit

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ABSTRACT

The current food habits with junk foods & unhealthy snacks looks very much suitable for dynamic business life but on other side it possess a critical danger to the health by being an cause of multiple disease like Obesity, Diabetics, Heart disease etc, the better way to control & take of our health is to focus on Healthy foods which has Low GI rating.

The objective of this research is to design a low GI biscuit suitable for all age group.

The GI analysis demonstrates that the high fibers added to biscuits had benefits to its consumers. It increase dietary fiber intake and reduce the glycemic index value of the biscuit, moreover it act as prebiotic to the gut micro flora.

Hence low GI biscuits can be suitable for all age groups and can be seen as a Healthy alternative for junk foods especially to school going kids.

Keywords- : Biscuits, GI, Fiber, GH analysis

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INTRODUCTION

The glycaemic index (GI) is defined as "the incremental area under the blood glucose curve following ingestion of a test food, expressed as a percentage of the corresponding area following anequivalent load of a reference carbohydrate, either glucose or white-wheat bread".

The glycemic index (GI) is the value which will help us to classify the foods according to their glycemic response. It measures the blood-glucose-raising ability of the available carbohydrate in foods. The principle is that the slower the rate of carbohydrate absorption, the lower the rise of blood glucose level and the lower the GI value. As per WHO guidelines GI value of ≥70 is considered high, a GI value 56-69 inclusive is medium and a GI value ≤ 55 is low, where glucose = 100.

The biscuit formulation is done by selecting the fine ingredient which will contribute to the low Glycemic Index of the biscuit, the low GI biscuit recipe includes Inulin, Polydextrose, Ragi, Oats fiber, even though Ragi is the food ingredient which comes under High GI rating it is used for its fiber content which will help to slowly release the glucose into blood stream.

OBJECTIVE AND SCOPE

The Major outcome will be achieving obtaining the low GI product by critical selection of raw materials or ingredient ,proper formulation and through continues trial, The Low GI biscuit will release the glucose into the blood stream in a very control as well as in a slow and study way so that there won't be any spike in the glucose in the blood stream once the biscuit is consumed, This will help us to prevent any health issue or Diabetic kind of any hereditary disease and it help us to create a healthy society.

Objective

To design low GI Biscuit suitable for all Age

Scope

Low GI Biscuit will be helpful to maintain healthier life and will be very much beneficial for Diabetic population

MATERIALS AND METHODS

3.1 Experimental Location

Mumbai Andheri East - Bakery Unit

3.2 Materials Required For Making Low GI Biscuit:

Wheat flour, Polydextrose, Sucralose, Wheat bran, Oats fibre, Inulin, Palm oil, Salt, Sodium Bicarbonate, Ammonium Bicarbonate, Water

3.3 Materials Required For Analyzing GI:

Electromagnetic sieve shaker, Water bath, Fibertech flasks, Standard flasks-100ml, Pipettes 1ml, 2ml, 5ml, 10ml, Measuring Cylinder, Centrifuge tubes.

3.4 Biscuit formulation –

Table: 3.1 Recipes of Control Biscuit

INGREDIENT	%
Wheat Flour	29.00
Ragi	25.48
Maltodextrin	4.25
Maltitol	10.5
Wheat Bran	4.84
Oat fibre	4.84
Palm oil	22.56
Lecithin	0.19
Salt	5.80
Sodium Bicarbonate	0.92
Ammonium Bicarbonate	0.53
SAPP	1.06

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Inulin	8.57
Sucralose	0.017
Polydextrose	2.46
Water	48.5

Table: 3.2 Recipe of low GI Biscuit

INGREDIENT	**%**
Wheat Flour	45.34
Sugar	30.23
Palm oil	27.21
Lecithin	0.30
Salt	1.44
Sodium Bicarbonate	0.83
Ammonium Bicarbonate	1.66
SAPP	0.04
Water	45.34

3.5 Making of Biscuits

The biscuit are made by following the industrial process, in first stage all the liquid ingredient like edible oil, emulsifier where added and mixed for 5 min for proper blend in Hobart mixer followed by the addition of leavening agent in dissolved condition and mixed for 5 minutes once the content was mixed uniformly without clumps the powdery ingredients where added and mixed for 4 min for proper dough development in the Hobart mixer, once the dough is made resting time of 10min was given under room temperature.

The dough was sheeted in the sheeter to the required thickness of 3.5mm and moulded into round shape for Bkaing, the biscuit is baked in the stationary oven for 6 min at the temperature of 240C

DISCUSSION

Baking has a detrimental influence on the starch digestibility which might be due to the transglycosidation reactions. These chemical alterations of starch takes place under conditions like baking at temperature at 240C leading to formation of atypical glycosidic bonds and the concomitant reduction in amyloyticsusceptibility resulting in formation of Resistant Starch.

Cooking increases the degree of Starch gelatinization and its susceptibility to enzymatic digestion.

The influence of food processing and cooking on glycaemic response is well documented. Treatments incorporating the generation of forces such as shearing, compression and extreme heat treatment increase gelatinization, which results in the breakdown of the starch granule. Thus, many processing conditions lead to an increased susceptibility of the starch
The fibre contribute to a low GI than control samples, this may be due to the presence of Inlulin, Polydextrose, Maltitol & Wheat bran which is present in the Low GI biscuit

CONCLUSION

Thus addition of easily available fibres like Wheat bran, Oats fibre to the recipe of Biscuits contribute to the slow release of glucose into the blood stream ,apart from the fibres the addition of pre biotic foods like Inulin, Maltitol & Polydextrose make the product rich in Nutrition as a not only Low GI product but also a prebiotic foods

The GI analysis shows the biscuit with more fibers rather than only wheat flour has very low GI of 40.96 when compare to 63.25 for the control

Hence low GI biscuits can be suitable for all age groups and can be seen as a healthy

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snack for the school going kids rather than the Junk food

REFERENCES

1. Brand JC, Colagiuri S, Crossman S, et al. (1991) Low-glycaemic index foods improve long-term glycaemic control in NIDDN. Diabetes Care; **14**: 95-101.
2. Brand JC, Colagiuri S, Foster K.(1997). The glycaemic index is easy and works in practice. Diabetes Care; **20**:1628-9.
3. Chandrasekara SR. Traditional Sri Lankandiet. Diabetes Care (2002; **25**: 14-6.
4. Frei, M., Siddhuraju, P., Becker, K. (2003). Studies on the in vitro starch digestibility and the glycemic index of six indigenous rice cultivars from the Philippines. Food Chemistry 83:395-402.
5. Gordon DT (1989) Functional properties Vs physiological action of total dietary fiber. Cereal foods world 34: 517-525.