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Development and validation of high fibre instant porridge (Dalia) premix

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Abstract

Porridge (Dalia) formulated from Oats (*Avena sativa* L.) have received considerable attention for their high content of dietary fibers, phytochemicals and nutritional value. The instant oats porridge (Dalia) mix, based on oats flakes, oats powder, moringa, guar gum powder, buttermilk and flavoring agent. Consumption of oats believed that possesses various health benefits such as hypocholesterolaemic and anti-cancerous properties. Oats have also recently been considered suitable in the diet of celiac patients. Dietary fibers (DF) are an essential part of the human diet. They consist of many substances of plant origin that are not digested in the human upper gastrointestinal tract. They include polysaccharides such as cereal β -glucan, arabinoxylans and cellulose. Dietary fibers are located in the cell walls of the grain. The outer layers, the seed coat and the pericarp contribute significantly to the insoluble dietary fiber content of the grain. Oat β -glucans are components of dietary fiber. As β -glucan is a plant polysaccharide resistant to digestion and absorption in the small intestine, it also attenuates both blood cholesterol and glucose. By studying the effect of processing on nutrients, organoleptic quality and shelf life of developed porridge using standard analytical methods.

Keywords: dietary fiber, β -glucans, guar gum, oats, moringa

Introduction

Porridge is the King of Super foods, packed full of goodness. Dalia taste is very delicious and is easy to make as well. It is nutritious for children and elders, for everyone. It can be digested easily, so as prepared from high dietary fiber content oats. Dalia is a traditional food in much of Northern Europe and Russia. Dalia was a typical means of preparing cereal crops for the table. Actually Dalia is the blended coarse granules of wheat and various types of pulses, in India. For the new formulation oats, moringa, guar gum is used. Oat bran is a dietary fiber and beta-glucan enriched oat fraction that can be used in products aiming towards improved nutritional status. Usually Oat bran from endosperm by sieving or classification processes the components are separated out. Traditional oat bran products have beta-glucan content around 8 to 12 %, whereas oat bran concentrates can have remarkably higher beta-glucan content. Phytochemical balance is providing by moringa leaves that is beneficial in Diabetes Mellitus. From endosperm of cluster bean Guar gum is processed which is a novel agrochemical. Benefits of guar gum are to control of many health problems like diabetes, bowel movements, heart disease and colon cancer. Guar seed endosperm is a source of water soluble gum which is used as stabilizer, emulsifier and thickener in various food products and contributes to soluble dietary fiber (SDF) portion of seed total dietary fiber (TDF). TDF and SDF, respectively, made up 52–58% and 26–32% of seed dry weight (Kay's *et al.* 2006) [7, 8].

Aim

Aim of the study is to develop a food product for DM patients.

Objectives

- To modify a traditional food product and develop a modified product suitable for DM patients and celiac patient.
- To analyze acceptability using sensory evaluation of the product.
- To standardize the product.
- Nutritional analysis of standardize test diet(s).

Materials: Oats, Guar gum, Moringa leaf powder, Black salt

Methodology

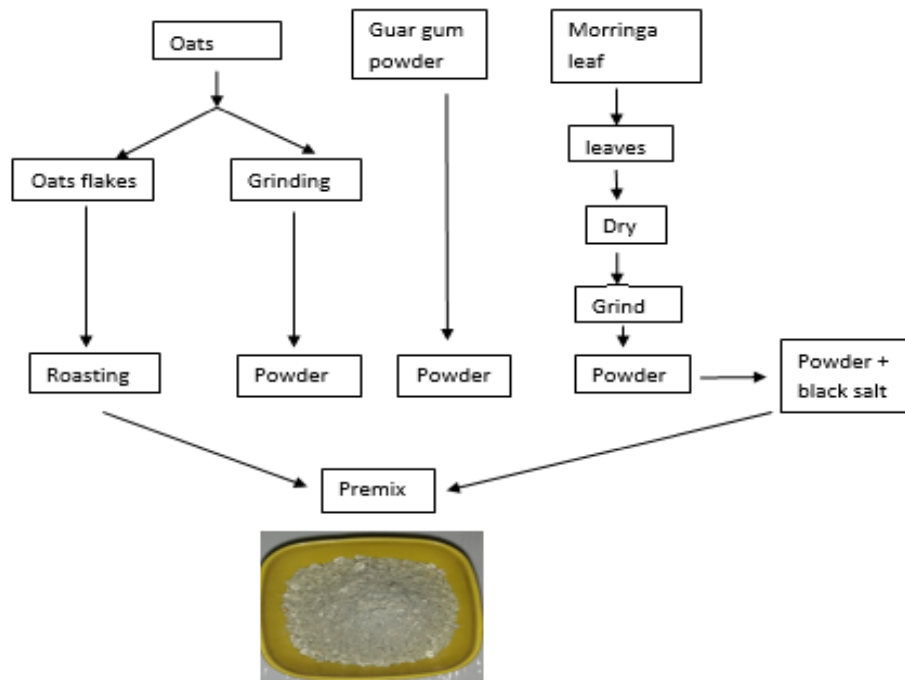


Fig 1

Moringa leaves were picked, washed, drained, coarsely ground and oven dried at 40°C. Coarsely ground powder of oats were mixed with fine ground powder of moringa leaves, roasted oats flakes, black salt and guar gum powder in appropriate amounts given above. The premix was ready to eat and can be prepared by adding 100 ml hot water and with 100 ml of butter milk.

Result and Analysis

Comparison and standardization of the traditional and new formulated fibre rich porridge premix showed that how certainly modified food products have lowered the carbohydrate content as compared to traditional recipe.

Table 1: Formulation and standardization of Fibre rich porridge premix per 100 gm.

Ingredients	D1	D2	D3	D4	D5	D6	D7
Oats Flakes (gm)	-	-	-	10	25	40	50
Oats Powder(gm)	20	25	40	35	35	30	20
Guar Gum(gm)	40	50	35	30	20	15	15
Moringa Leaves(gm)	20	15	17	15	10	8	8
Black Salt (gm)	20	10	8	10	10	7	7
Water and Butter Milk (ml)	100+100	100+100	100+100	100+100	100+100	100+100	100+100

Table 2: Validation and analysis of porridge premix

S. No.	Test Parameter(s)	Test Method Used	Results (unit)
1	Protein	Kjeldhal method	10.33 g/100g
2	Fat	Soxhlet method	8.32 g/100g
3	Carbohydrate	Difference method	64.47 g/100g
4	Energy	Calculation method	374.08 kcal/100g
5	Total sugar	Lane and eynon method	2.01 g/100g
6	Total phenolic content	Folin- ciocalteu's	285.12 mg GAE/100g
7	Moisture	IS 4333(part 2):2002 (Re:2012)	6.24 g/100g
8	Total ash	IS 1155:1968 (RA:2015)	8.30 g/100g
9	Crude fibre	IS 1155:1968 (RA:2015)	2.34 g/100g
10	Magnesium (C)	AAS method	10.25 mg/100g

Result and Discussion

The justification of the experimental findings is under taken. The results have been explained under this with the help different test and analysis methods. The result of overall acceptability of porridge made by incorporating oats flakes, oats powder, guar gum, and moringa leaves as compared to control the diabetes mellitus as given in table no. 1. In case of nutritious oat porridge D7 (oats flakes: oats powder: guar gum: moringa leaves) formulated porridge as had more

acceptable than other trials. For the final acceptable trial D7 the present total amount of energy, protein, fat, carbohydrate, moisture content, phenolic compound, crude fiber, magnesium, ash, sugar of product porridge premix is given in table no. 2 this nutritional value performed by the different test method. Different trials was performed given in table no. 1. Porridge premix was prepared by oats flakes, oats powder, guar gum, moringa leaves. Total energy content of porridge premix was significantly 15 kcal high than on the comparison

between patanjali porridge, while on the analysis of formulated porridge premix protein content is 10.33g, carbohydrate content is 64.47g, fat content is 8.32g and crude fibre is 2.34 gm respectively. Apart from these the porridge premix content good amount of total phenolics and mineral content. The present investigations were carried out for the nutritious porridge and its quality evaluation which shows the comparison between market available porridge. Nutritious oats mix porridge was more acceptable when it was formulated it is clear from the data given in table no. 1 and table no. 2 with different formulations and analysis test methods has better score for consumer acceptability especially for those consumer who suffers from the disease diabetes mellitus.

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