

Sensory evaluation of Food product developed from various variations of *Catharanthus Roseus* and Ragi flour

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Abstract

Many researches have shown that the Diabetes Mellitus is being managed by the flower of *Catharanthus Roseus*. The development of food product in the present study is being done keeping in view the benefits of the flower and the plant. In the present research, Ragi cookies were made by taking the different combinations & three samples were made A, B & C in the ratios of 5, 7.5 and 10 percent of the total weight of the ingredients respectively. Twenty panel of experts (Nutritionists) were involved for the sensory evaluation of the cookies. Sample C was rated best at the parameters of Taste, color, texture, firmness stickiness and over all acceptability.

Keywords: catharanthus roseus, ragi flour, diabetes mellitus

Introduction

Catharanthus Roseus

It is also known as rose periwinkle, Madagascar, vinca rosea and sadabahar flower. It belongs to family apocynaceae and is a medicinal plant. It contains five petals of white, pink or purple color with dark pink centre and have dark green glossy leaves having opposite phyllotaxy. It is found in warm places and can tolerate critical conditions. It is an endangered species due to slash and burn agriculture. Sadabahar is rich in alkaloids i.e. secondary metabolites of plants with different chemical structures. Different parts of plants contain different alkaloids like reserpine, vincine, antineoplastin, vincristine, raubasin and ajmalicine and are used to treat lymphoblastic leukemia, hodgkins disease, skin cancer, breast cancer, diabetes, mouth ulcers, etc. Alkaloids like vindoline, lochnerine, catharanthine, vindolinine lowers blood sugar level and have anti cancerous properties. (gajalakshmi s, *et al*; 2013).

Also known as finger millet is rich in nutrients, minerals and fiber. Ragi is high energy nutritious food that helps in reducing malnutrition and cures diseases like Obesity, Cvd, Diabetes, etc. Millet is a gluten free food and can be a substitute for celiac patients. Millet is tiny and round in shape that can grow in non-fertile soil and is pest resistant. It is rich in proteins, calcium, dietary fiber and polyphenols. Due to rich source of amino acid, dietary fiber, polyphenols exhibits anti diabetic, anti-microbial and antioxidant properties against tumours and Atherosclerosis. Ragi is the richest source of calcium and vitamin D therefore given to babies as their first baby food and helps in bone strengthening and bone growth. Ragi is also used in weight loss programmes as it contains saturated fats. Lecithin and methionine present in ragi decreases cholesterol levels and also stops fat formation in liver. Ragi is good in Depression, Anxiety, Migraine and Insomnia. (Sarita & Ekta, 2016)

Alkaloids are the secondary metabolites that have been isolated traditionally from the plants (De silva; 1997). Alkaloids are used in large number in medicines and one of the basic component of medicines is terpenoid indole alkaloids (Luca and Pierre, 2000). *C.roseus* is used as a hypoglycemic agent in traditional medicines as it is a source of chemotherapeutic agents and produces terpenoid indole alkaloids (van der heijden *et al*; 2004). Vinblastin and vincristine in *C. roseus* have anti cancerous properties that are used in treatment against hodgkins disease and leukemia (Mukherjee *et al*; 2001). (Shanks *et al*; 1998) Vinblastin and vincristine have growth inhibition effect on human tumours and is used for treatment of Neoplasmas and Leukemia in children. The ethanolic extract present in plant reduces blood sugar level. The crude extract present in different parts of the plants shows anti-microbial property against *Pseudomonas aeruginosa* *Salmonella typhimurium* *Staphylococcus aureus*. *C.roseus* acts as helminthic agent since traditional times. It is also used in treating Asthama, Tuberculosis and flatulence (Monika, Vandana, 2013) Ragi is much more nutritionally rich than wheat, rice and provide proteins and minerals to poorest of poor at cheap rates (Seetharam *et al.*, 1986). Variable amount of crude protein is present in different ragi samples. White ragi contains more protein than brown ragi and prolamine and glutamine constitute the major protein fractions (Rani, 1995).Finger millet contains high level of glutamic acid, threonine, isoleucine, methionine, valine that are good for maintenance purpose for humans. Linoleic acid, palmitic acid and oleic acid are the main lipids present in millet (Paderson and Eggum, 1983). Ragi contains anti nutritional factors that include tannins, non-starch polysaccharide, protease inhibitors, oxalates and phytates which affects digestibility of nutrients (abate and gomez, 1984).The amount of tannins present in ragi

varies with its variety. Hulse *et al.* (1980) and Rao and Deosthale (1988) reported that white ragi contains less or no tannins as compared to brown ragi. Shivaraj and Pattabiraman (1981) reported that protease inhibitors are responsible for the activity of amylase and trypsin inhibitors. Chandrashekara *et al.* (1982) described that finger millet had greater anti tryptic activity than anti chymotryptic activity. Millet contains phytochemicals like lignans, β -glucan, inulin, resistant starch, phytates, sterols, tocopherol, dietary fiber and carotenoids, etc. that helps in building body immune system. Millet contains nutraceutical properties that prevents low Blood pressure, Cvd, and several types of Cancer. Aldose reductase inhibits the sorbitol accumulation that in turn reduces Diabetes induced diseases. Millet is a good source of magnesium that reduces the effect of Migraine and Heart Attacks. Millet contains probiotics that are the living organisms which acts as a treatment for Diarrhea in young children. It also has prebiotic activity that increases bacteria in number and promotes digestion. Due to the presence of phenols, tannins, phytates it reduces the risk of several types of cancer. It contains ferulic acid that prevents tissue damage and stimulate wound healing in diabetic patients.

Materials and Methods

The raw material required for cookies are ragi flour, wheat flour, bengal gram flour (besan), lotus seed (makhana), jaggery, butter, catharanthus roseus. The main ingredient catharanthus roseus was procured from my home in Chandigarh. Plant materials were washed separately under unning tap water, followed by rinse using sterilized distilled water. Excess of water was removed from the plant material using filter paper before they were used for extraction. I collected the flowers from the plant, sundried it for about 5-7 days and then grounded it to form a powder. Another main ingredient ragi was bought from departmental store nearby my house. Whole ragi available in the store, dry roasted on a medium flame and grounded to form a fine powder with the help of household grinder. Other ingredients were also brought from the departmental store. Food product development and their acceptability appraisal through hedonic rating test carried out by a semi trained panel comprising 20 panelists from the department of Dietetics and Applied Nutrition, Amity University. Panelist should be fit and free from tiredness to reduce the possibility of errors. Ensure that there is sufficient light at the judgment site. If too many people congregate, it may interfere with the sensory evaluation, site should be free from distraction. Drink water between the evaluations of samples. The panelists were instructed not to swallow the samples. Proper weighing of the raw materials to be used in the cooking. Area should be odor free. There should be proper ventilation. Instruction to the panelists should be understandable, concise, and appropriate to the test Hedonic rating scale They were pre- selected on the basis of good health conditions, time availability, no allergy plants products, any aversion to Catharanthus roseus, and willingness to participate. The panelists performed organoleptic appraisal by 7 point hedonic test to assess the overall products preferences. Evaluation of taste, colour, texture, firmness, stickiness, and overall, acceptability were made in the scale. Three samples were prepared with variations 2.5gms in sample 'A' 5gms in sample 'B' and 10 gms in sample 'C'. Standardization of

cookie recipe. The cookies were prepared with a standardized a recipe as follows:

100gms Ragi flour, 100gms wheat flour, 200gms powdered jaggery, 100gms butter, 1 tsp baking powder, 2tsp milk, few drops of vanilla essence.

Method

Sieve ragi flour, wheat flour, jaggery, baking powder. Add cold butter to it and mix well with hands. Add vanilla essence and milk to it and knead well for 2 minutes. Wrap the dough in butter paper and refrigerate for 20 minutes. Pre- heat the oven at 170 degree celsius and grease the tray with butter and keep aside. Roll the dough in small balls and flatten them between your palms. Press it with fork to avoid fluffiness. Bake them for 15 - 20 minutes. Cool them on wire rack and store in air - tight container.

Development of the product Ingredients

100gms RAGI FLOUR,100gms MAKHANA POWDERED,50gms BESAN,50gms WHEAT FLOUR,10gms CATHARANTHUS ROSEUS,250gms JAGGERY,1tsp BAKING POWDER, 2tsp MILK,1tsp VANILLA ESSENCE,100gms BUTTER. Dry roast ragi flour, makhana and besan. Blend makhana and C.roseus in mixer to form a powder. Sieve ragi, wheat, besan, jaggery, C.roseus, makhana, baking powder in a bowl. Add cold butter to it and mix well with hands. Now, add vanilla essence and milk to it and knead well. Wrap the dough in butter paper and refrigerate for 20 minutes. Pre heat the oven at 170 degree celsius and grease the tray with butter and keep aside. Roll the dough in small balls and flatten them between your palms. Press it with fork to avoid fluffiness. Bake them for 15 - 20 minutes. Cool them on wire rack and store in air tight container.

Results and discussions statistical analysis

After the sensory evaluation conducted by 20 semi trained panel of judges the mean scores and standard deviation was calculated.

Attributes	Product (A)	Product (B)	Product (C)
Taste	8.5 ±1.192079	8.1±1.447321	8.5±1.192079
Colour	8.75±1.164158	8.75±1.292692	8.95±0.944513
Texture	8.9±1.410487	8.7±1.031095	8.8±1.056309
Frmness	8.9±1.209611	8.65±1.089423	8.55±0.887041
Stickiness	9.15±0.988087	8.7±1.174286	8.95±1.190975
Acceptability	8.5±1.432701	8.45±1.050063	8.75±1.292692
Overall	8.6±1.231174	8.6±1.095445	8.65±1.039999

Product A

In product A the ratio of catharanthus roseus was 5. The sugar content was low, and shape, texture and firmness were all acceptable but colour was not much accepted.

Product B

In product B the ratio of catharanthus roseus was 7.5. The color, firmness, texture and shape was accepted but taste was somewhat bitter.

Product C

In product C the ratio of catharanthus roseus was 10. It was well accepted as the scores of "10 g" were better than all the variations made at different concentrations for all attributes. As

the concentration was increased, the mean scores for appearance, Colour, flavour, texture, taste, after taste, and overall acceptability were found to be increased.

Conclusion

The scores of standard were more acceptable than all the variations made at different concentrations. It was also observed that the concentration of *Catharanthus roseus* fresh leaves, in the samples was inversely proportional to the acceptability scores. Ten g *Catharanthus roseus* leaves incorporation in food products developed was found to be organoleptically acceptable by the semi trained panel members. Amongst the incorporated food preparations, the mean scores for overall acceptability were highest for sample C and lowest for sample A Thus, this holds great promise for future research for the formulation of potent anti-diabetic drug for the present plant.

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