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Research Article

'Study on Preparation & Development of Cookies Enriched with Mint Leaf *(Mentha)* Powder'

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Abstract: Cookies are most commonly baked until crisp or just long enough that they remain soft, but some kinds of cookies are not baked at all. Cookies are made in a wide variety of styles, using an array of ingredients including sugars, spices, chocolate, butter, peanut butter, nuts, or dried fruits. The softness of the cookie may depend on how long it is baked. The cookies were prepared and development of enriched mint powder. The cookies prepared were then analyzed for the various sensory quality attributes like color, flavor, appearance, taste, texture and overall acceptability by a semi-trained panel of 10 judges on a 9-point Hedonic scale (1-extremely dislike, 9- extremely like) in accordance with methods suggested by Am trine *et al.* (1965). The scores obtained were then statistically analyzed as per the methods given by Panes and Sukhumi (1985). This Processing was conducted in the factory of Ispahani foods limited Group, Gazipur. Bangladesh, The study work has been done From June to December, 2019; a general theory of cookies may be formulated this way. Despite its descent from cakes and other sweetened breads, the cookie in almost all its forms has abandoned water as a medium for cohesion. Water in cakes serves to make the base (in the case of cakes called "batter" as thin as possible, which allows the bubbles responsible for a cake's fluffiness to better form. In the cookie, the agent of cohesion has become some form of oil. Oils, whether they be in the form of butter, vegetable oils, or lard, are much more viscous than water and evaporate freely at a much higher temperature than water. Thus a cake made with butter or eggs instead of water is far denser after removal from the oven.

Keywords: Food, Cookies, Mint Leaf (*Mentha*) Powder, Ispahani, German University Bangladesh.

INTRODUCTION

The experiment was conducted at the Food Science and Engineering Department's Lab (FSE Lab) at German University Bangladesh. The dried white button mints good quality raw materials like refined soft wheat flour, hydrogenated fat, sugar, fresh eggs, baking powder etc. were purchased from local market and cookies were prepared by taking suitable ingredients. Levels as detailed in Table. The mixing of the ingredients was done in three steps for preparation of the dough in order to prepare typical, full calorie crispy cookies with enrichment of mint powder in different proportions. The sugar (powdered) and baking soda were creamed together with shortening. The liquid ingredients, eggs, water and Ghee were incorporated and remaining dry ingredients such as flour, baking powder, salt and mint powder, coffee, sugar were mixed with these ingredients and blended in a mixer and kneaded by a hand dough mixer. The dough was maintained at an almost constant room temperature by controlling the temperature of milk added to the dough. The baking was carried out at 180 C temperatures for the period of 20 min. in Bajaj make portable baking oven. The baked cookies were cooled at room temperature and packed in low Density polyethylene bags (200gm).Benedik et al. [1].

BACKGROUND INFORMATION

Cookies are one of the earliest food items. Due to dried food, the cookies requirement is unlimited. Cookies are supplied as environmental crashes and crude areas in the affected areas. In the modern era, new cookies are being changed by changing different elements. Bakery products play an important role in the development of human beings.

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One of the benefits of cookies is to easily get good food rich foods. In the modern world, there is a strong relation between cookies and tea [1].

With global travel becoming widespread at that time, cookies made a natural travel companion, a modernized equivalent of the travel cakes used throughout history. One of the most popular early cookies [2] which traveled especially well and became known on every continent by similar names was the jumble, a relatively hard cookie made largely from nuts, sweetener, and water.

The worlds biscuit market contains low cost diversity, such as glucose biscuits but there is considerable demand for special cookies like cookies. Unlike the crackers and biscuits, cookies are very sweet and high in fat content and delicate among baked goods. Cookies have a much longer shelf life than bread and cake or rather the rest of the processed foods.

With the addition of mint powder, it is possible to create notorious rich cookies. 70 percent have chlorophyll and thalassemia patient will have a new life coming from the mint leaves. There are antioxidants and phytonutrients in the mint leaf as well as vitamin A, vitamin D and vitamin K etc.[3].One them mint leaf, there are alpha to phenol and pantothenic acid and minerals contain calcium, potassium, Iron magnesium, phosphorus, zinc, copper etc. Mint leaves are used to create any one bakery product. The mint leaves will be used for the development of new product.

Enrichment of foods with supplements like protein and vitamins is of current interest because of nutritional awareness of consumers. The incorporation of mushrooms into existing food items is as yet an untouched area of research.(MARDI Research Journal,19(2):297-304)Therefore, the present study was undertaken to develop novel variety of cookies enriched with addition of mint powder.

General Objectives

- To develop a new food item.
- To develop a soft textured Mint cookie.
- To attractive and delicious to all aged people.
- To utilize and properly use of Mint cookies in our local market.
- To implement this product in industrial area/sector.
- To build up a well agro based profit from this product.

Specific Objectives

- Development of cookies enriched with mint leaf Powder.
- Mint has one of the highest antioxidant's capacities of any food.
- It provides a nutritional breakdown of mint and looks at its possible health benefits, such as -Allergies, Breast-feeding, Common cold, Gastric ulcers, Pain relief, Skin, Oral health.

LITURETURE REVIEW

Mint leaf plants

Mint is a perennial with very fragrant, toothed leaves and tiny purple, pink, or white flowers. It has a fruity, aromatic taste. One of the most popular and common species of mint is the leaf plant which is also known for its botanical name Mentha. There are many varieties of mint—all fragrant, whether shiny or fuzzy, smooth or crinkled, bright green or variegated. However, you can always tell a member of the mint family by its square stem. Rolling it between your fingers, you'll notice a pungent scent and think of candy, sweet teas, or maybe even mint juleps [4].

ANTIMICROBIAL EFFECTS

The constituents of the essential oil of M. pipe Rita have different modes of action in bacteria and eukaryotic cells. They exhibit strong bactericidal properties, and in eukaryotic they modify apoptosis and differentiation, interfere with the post translational modification of proteins and induce or inhibit certain liver detoxifying enzymes. Antibacterial activity of plants may be attributed to the presence of phenol compounds that behave as pro-oxidants because they undergo high oxidation, so instead of eliminating the reaction of free radical chain, they lead to generation of superoxide and quinines. The most easily oxidized phenolic such as quercetin and Gallic acid have pro-oxidant activity but tannins, due to the high molecular weight have little pro-oxidant activity. According to she had et al. the bioactivity found indifferent compounds of plants are generally attributed tithe presence of secondary metabolites which produce physiological actions. The extracts can be categorized into several classes among which are terpenoids,flavonoids and phenolic that are known to be active against bacteria, viruses and protozoa.(Allam et al.).

Scientific Works on Mint leaf

Indigestion and gas: Mint is a calming and soothing herb that has been used for thousands of years to aid with upset stomach or indigestion. Mint is thought to increase bile secretion and encourage bile flow, which helps to speed and ease digestion (and which may also support healthy cholesterol levels)[5].

Mentha is a member of the tribe Mentee in the subfamily Nepetoideae. The tribe contains about 65 genera, and relationships within it remain obscure. Authors have disagreed on the circumscription of Mentha. For example, M. corvine has been placed in Pulegium and Preslia, and M. cunninghamii has been placed in Micromere. In 2004, a molecular phylogenetic study indicated that both M. corvine and M.

cunninghamii should be included in Mentha. However, M. cunninghamii was excluded in a 2007 treatment of the genus.

More than 3,000 names have been published in the genus Mentha, at ranks from species to forms, the majority of which are regarded as synonyms or illegitimate names. The taxonomy of the genus is made difficult because many species hybridize readily or are themselves derived from possibly ancient hybridization events. Seeds from hybrids give rise to variable offspring, which may spread through vegetative propagation. The variability has led to what has been described as "paroxysms of species and sub specific taxa"; for example, one taxonomist published 434 new mint taxa for central Europe alone between 1911 and 1916.Recent sources recognize between 18 and 24 species.

METHODOLOGY

Raw material Collection

1. We collect mint leaf after harvesting must be transported in refrigerated vans from field. The leaves should be sound, undamaged, mold free and mature in order to keep all the active ingredients in full concentration.
2. We maintain proper handling of the leaves after its harvesting because the decomposition of the gel matrix starts just after its cutting due to natural enzymatic reactions and the activity of bacteria normally present on the leaves. It can adversely affect the quality of the product.
3. Thus, the freshly removed leaves are refrigerated within 6 hr. or the leaves are directly fed to processing plant on the farm itself.

Raw Materials for Mint Cookies Production

Table-1

SL NO	NAME	(GM)
01	Mint powder	4
02	Icing Sugar	250
03	Wheat Flour	600
04	Baking Powder	2
05	Salt	2
06	Ghee	50
07	Egg (ml)	100
08	Butter	500
09	Milk Powder	4
10	Coffee	4

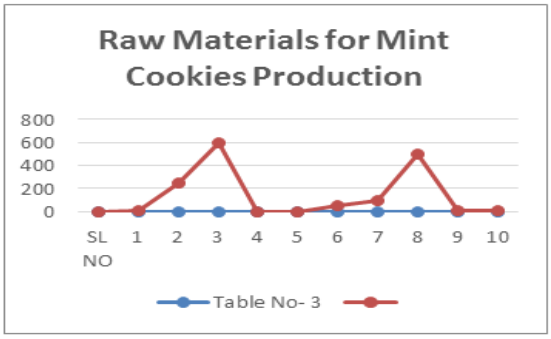

Fig-1: Raw Material for Mint Cookies Production

Describe Ingredients of Mint cookies

Salt (NaCl)

Common salt is a mineral composed primarily of sodium chloride (NaCl). Sodium chloride /ˌsodium ˈklɔraɪd/, also known as salt, common salt, table salt or halite, is an ionic compound with the chemical formula NaCl, representing a 1:1 ratio of sodium and chloride ions. Sodium chloride is the salt most responsible for the salinity of seawater and of the extracellular fluid of many multicellular organisms. In the form of edible or table salt.

Fig-2: Salt (NaCl)

Application

Salt (NaCl) is commonly used as a food preservative. Sodium chloride is used to make tasteful food product. Sodium chloride is used to add iodine to food. It is the main source of sodium and chlorine compounds used as food for chemical synthesis. Elvers, B. et al.,(ed.) [6].

Mint Powder

The mint leaves are a fragrant element that increases the permeability of the food. There are more than 70 percent chlorophyll on the mint sheet. Mint leaves contain antioxdants and photonutrients. Antioxidents and phytonutrients are an important element for our body. The mint leaves have different minrrals. These are calcium, iron, magnesium, phoshorus, potassium, zine, copper etc. There are various types of vitamins in the mint leaf vitamin A, vitamin D, vitamin K etc.First , collect the good quality mint leaves. After that the oven will be dry at 140 C temperature.

Fig-3: Mint Powder

Application

- It is the main ingredients of Mint cookies.
- It is removing the gash problem.
- It is removing the skin problem. Harley, Raymond M.; et al.

Baking powder

Baking powder Isa dry chemical agent, mixture of carbonate or bicarbonate and a weak acid and is used for increasing the volume and lightening the texture of baked goods. Baking powder works by releasing carbon dioxide gas into a batter or dough through an acid-base reaction, causing bubbles in the wet mixture to expand and thus leavening the mixture.

Baking powder is used instead of yeast for end-products where fermentation flavors would be undesirable or where the batter lacks the elastic structure to hold gas bubbles for more than a few minutes, or to speed the production. Because carbon dioxide is released at a faster rate through the acid-base reaction than through fermentation, breads made by chemical leavening are called quick breads.

Fig-4: Backing powder

Applications

- It is a livening agent.
- Pizza, Bread, Cake, use

This agent **[**7],

Determination of moisture: Moisture testing is an important issue for cookies.

Procedure: Weight accurately about 5 gm. of the sample in the moisture dish previously dried in an oven and weighed. Place the dish in the oven maintained at 105±2^{0}C for 4-5 hours. Cool in the desiccators and weigh. Repeat the process of drying, cooling, and weighing at 30 minutes interval until the difference in two consecutive weighing is less than 1 mg. Record the lowest weight.

Calculation

Moisture percent by weight = $\frac{w1 - w2}{w1 - w}$x100,

Where,

w1 = weight in gm. of the dish with material before drying.

w2 = weight in gm. of dish with material after drying to constant weight.

w = weight in gm. of the empty dish.

(Ref: - I.S.1011 – 1992 Biscuits – Specification)

Flow Chart of Mint Cookies Production

Introduction

The leaf, fresh or dried, is the culinary source of mint. Fresh mint is usually preferred over dried mint when storage of the mint is not a problem. The leaves have a warm, fresh, aromatic, sweet flavor with a cool aftertaste, and are used in teas, beverages, jellies, syrups, candies, and ice creams.

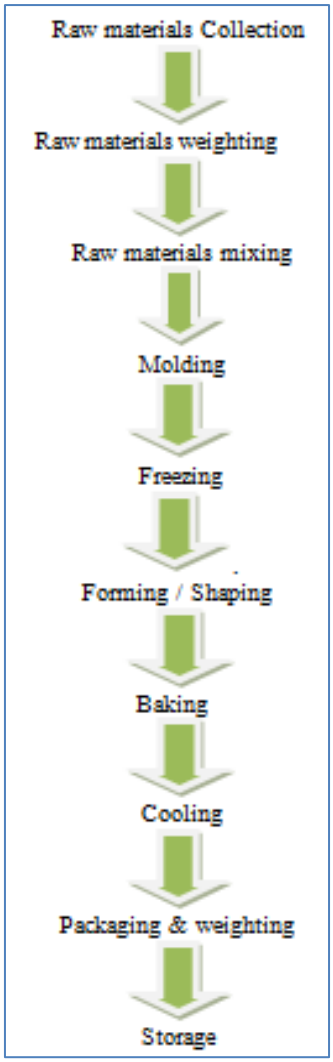

Fig-5: Flow Chart of Mint cookies production

RESULT & DISCUSSION

Table-2: Sensory evaluation report

SL NO.	PARAMETERS	SAMPLE01	SAMPLE 02	SAMPLE 03
01	Color	5-10	7	6
02	Taste	5-10	8	6
03	Flavor	5-10	8	6
04	Organoleptic test	5-10	7	7

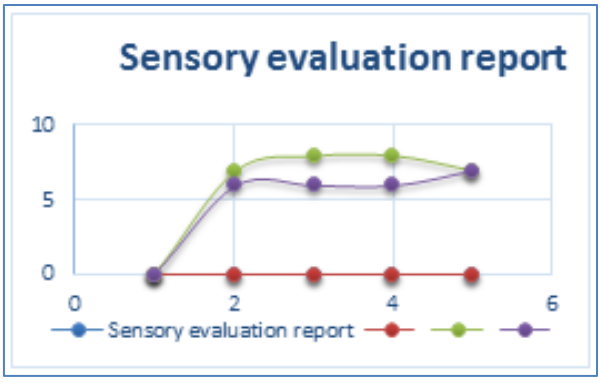

Fig-6: Sensory evaluation reports

As per evaluation of three (03) samples, Average value of color of sample 02 is accepted. Because we used less mint powder in sample 01, more less mint powder in sample 03. Taste of sample 02 also accepted. Because taste quality of sample 01 & 02 is not perfect as per standard. Flavor of sample 01 is better than sample 02&03. Organoleptic test of sample 02 is better than sample 01&03. At the end of all evaluation, sample 2 is accepted for manufacturing with little modification of flavor value.

Table-3: Result Value

SL NO:	DESCRIPTION	VALUE
01	Moisture	4.4%
02	Total Ash	0.96%
03	Protein	4.8%
04	Extract Fat	30.2%
05	Total Carbohydrate	62.5%

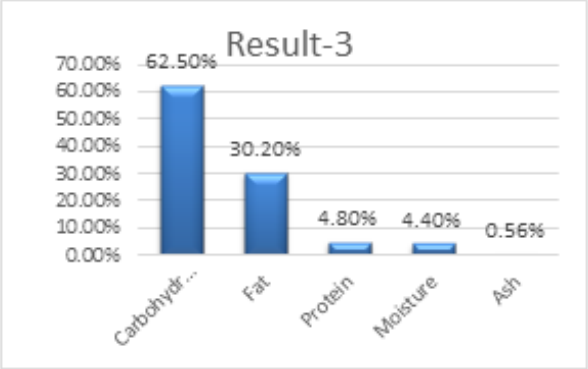

Fig-7: Graphical diagram of result value of mint cookies

As per evaluation of mentioned 03 samples, Acidity value of sample 02 is better than sample 1&7. Because, in sample 01 less citric acid used and in sample 02 higher citric acid used than proper value. Accepted value of acidity is 0.21% with the tolerance 0.02%.^{o}Brix value of sample 01& 02 was same and in acceptable level. But ^{b}rix value of sample 03 is lower than sample 01& 02, because of low sugar was used in that sample. Accepted ^{b}rix value is 8 with the tolerance 0.5.^{o}Brix of sugar syrup was fixed for each sample. The P^{H} value of sample 02 was perfect. But sample 01 was less acidic and sample 03 was high acidic than perfect value. Accepted P^{H} value is 3.6 with the tolerance 0.1. So sample 02 is accepted for the manufacturing of Aloe Vera juice.

CONCLUTION

The mint cookies prepared by replacing Maida with 5% mint powder were found superior in all the sensory qualities followed by 10% replacement. However, further addition was noted certain disagreeable effects on the almost all quality parameters of the cookies, which could be reduced by addition of various modifiers and additives in order to get excellent quality cookies. Use of enzyme papain was found to bring about desirable changes in dough quality on addition of mint powder. More than 3,000 names have been published in the genus Mentha, at ranks from species to forms, the majority of which are regarded as synonyms or illegitimate names. The taxonomy of the genus is made difficult because many species hybridize readily or are themselves derived from possibly ancient hybridization events. Seeds from hybrids give rise to variable offspring, which may spread through vegetative propagation.

RECOMMENDATIONS

Sanitized and hygienic environment are recommending for development of mint leaf processing with cookies. Mint leaf reduces the effectiveness and may increase the adverse effects of bile secretion and encourage bile flow, due to its soothing herb effect. It is a faster weight loss and metabolisms improve of human body. Mint stimulates digestive enzyme. Which helps facilitate batter absorption of nutrition from food?
Some recommendation are given below-

- Must be careful during raw materials collection.
- All the quality parameters should be maintained.
- Proper handling should maintain.
- Maintain best storage quality.

REFERANCES

1. Gandhi, A.P., Kotwaliwale, N., Kawalkar, J., Srivastav, D.C., Parihar, V.S. and Raghunadh, P. (2001). Effect of incorporation of defatted soy flour on the quality of sweet biscuits. J. Food Sci. Technol., 38(5): 502-503.
2. Sharp, J. T., Strand, V., Leung, H., Hurley, F., & Loew- Friedrich, I. (2000). Treatment with leflunomide slows radiographic progression of rheumatoid arthritis: results from three randomized controlled trials of leflunomide in patients with active rheumatoid arthritis. Arthritis & Rheumatism: Official Journal of the American College of Rheumatology, 43(3), 495-505.
3. Shah, A., Ahmad, M., Ashwar, B. A., Gani, A., Masoodi, F. A., Wani, I. A., & Gani, A. (2015). Effect of γ-irradiation on structure and nutraceutical potential of β-d-glucan from barley (Hordeum vulgare). International Journal of Biological Macromolecules, 72, 1168-1175.
4. Jump up to: Brown, Martha C. (1981). "Of Pearl Ash, Emptins, and Tree Sweetnin' America's First Native Cookbook". American Heritage, 32(5). Retrieved 22 January 2019.
5. Batool, S. S., Khursheed, S., & Jahangir, H. (2017). Academic procrastination as a product of low self-esteem: A mediational role of academic self-efficacy. Pakistan Journal of Psychological Research, 195-211.
6. Elvers, B. (ed.) (1991). Ullmann's Encyclopedia of Industrial Chemistry, 5th ed. A24, Wiley, 319,
7. Matz, S.A. (1992). Bakery Technology and Engineering (3 ed.). Springer. 54. Retrieved 2009-08-12.

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