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RESEARCH ARTICLE

UTILIZATION OF COCONUT FLOUR FOR THE DEVELOPMENT AND NUTRITIONAL ANALYSIS OF GLUTEN FREE SWEET DISH

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ABSTRACT

Coconut flour is considered as a palatable product for gluten allergic and insensitive people because it is a gluten- free and grain free that can be used to substitute wheat flour for making various dishes. This flour is high in dietary fiber, protein and low in carbohydrates and calories. It bolsters a surprising list of nourishing benefits like in lowering cholesterol, protect heart health , balances blood sugar, insulin levels and increases insulin sensitivity , reducing symptoms associated with diabetes to name a few. Six types of product were made from coconut flour with three different samples each of coconut Ladoo and coconut Barfi. Moisture,%= 2.61, Fat,%= 33.8, Protein,%= 2.1 was recorded in coconut Ladoo and for coconut Barfi was Moisture,%= 3.10, Fat,%= 46.6, Protein,%= 2.91

INTRODUCTION

A significant population is averse to wheat because they are allergic or sensitive towards gluten present in it. Allergy or sensitivity towards gluten is due to the presence of a kind of disorder in human body which includes celiac disease. This allergic trait or disorder causes an adverse effect on the intestinal tract. Giving this fact a due consideration, coconut flour has been found to be a better and viable alternative substitute for wheat. Coconut flour contain equal amount of protein to wheat flour minus the gluten present in wheat. Coconut flour is made from dried and powdered coconut meat. After removing the outer green husk of a coconut, remaining part left which is white lining is the coconut meat. It can be seen after cracking the fresh coconut after that milk is separated in order to produce the dry "flour". When meat is strained and coconut's milk is removed, it is baked at a low temperature for drying. After drying coconut flour is made.

METHOD OF MAKING COCONUT FLOUR

Following are the steps for making coconut flour-

I) Removing the coconut Meat: a hole can be made through one of the eyes of the coconut. Put the coconut upside-down so that the liquid inside drains out. Break the coconut into two parts. Scrap the white meat away from the hard outer shell (Article: how to make coconut flour, <http://www.wikihow.com/Make-Coconut-Flour>).

- II) Straining the liquid: add boiled water to the coconut meat for blending. Pulse the water and coconut meat on high speed for at least five minutes. When it become milky, strain the combo and save the pulp (<http://www.nourishingcreations.com/2011/04/how-to-make-coconut-milk-from-fresh.html>).
- III) Dehydrating the coconut Pulp: Preheating the oven at 170 degrees Fahrenheit (77 degrees Celsius). Transfer the coconut pulp to the baking sheet. On the parchment paper, spread the strained coconut pulp forming it into a flat, even layer. Bake the pulp for 45 minutes. Cook it until it dry (<http://allsortsofpretty.com/super-easy-diy-coconut-milk-coconut-flour>).
- IV) Grinding the coconut into Flour: Transfer the dehydrated pulp to a blender. Scrape all of the dry coconut into blender. Pulse on high for 2 minutes, or it appears finely ground (<http://www.coconutflourrecipes.org/how-to-make-coconut-flour-at-home.html>).

HEALTH BENEFITS OF COCONUT FLOUR

- 1. Rich in Fiber:** Fiber is important for the maintenance of good digestion and in eliminating waste, by immediately absorbing and promoting the timely removal of irritating agents. It is essential for the detoxification of the body (<http://blog.radiantlifecatalog.com/bid/59284/What-are-the-Health-Benefits-of-Coconut-Flour>).
- 2. Rich in Trace Minerals:** many grain products like wheat, corn and soy are mass-harvested on the depleted soils of industrial farms and subject to genetic modification, coconuts offer a refreshing source of naturally occurring trace minerals. Coconut palms are generally found thriving

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in the mineral rich volcanic soils of the tropics and naturally fertilized with water, because of which it becomes complete mixture of all of the trace minerals necessary for the human body. Coconuts are also free of phytic acid that works as an antinutrient (Dr. Lalitha Ramaswamy, 2013).

- 1. Weight Management:** as coconut consists of fiber, it absorbs water like a sponge. It aids in producing a feeling of fullness. It gives bulkiness without supplying fat-promoting calories resulting consuming less food and low calories and thus manage weight (Bruce Fife, 2016).
- 2. Moderating blood sugar and insulin levels:** dietary fiber helps moderate swings in blood sugar by slowing down the absorption of sugar into the blood stream. This helps keep blood sugar and insulin levels under control which is good for diabetic peoples (Bruce Fife, 2016).
- 3. Gluten Free:** Coconut flour is gluten free a substitute to wheat flour. Gluten is a protein found in wheat, barley and rye. Those who are allergic to gluten protein are advised to have a gluten free diet (<http://www.livestrong.com/article/28183-health-benefits-coconut-flour>).
- 4. Higher Protein and Healthy Fats:** various researches show that coconut flour contains a significant amount of protein. A 100-gram serving of coconut flour has 19 grams of protein while wheat flour has just 10grams. It doesn't contain all the essential amino acids, but it contributes to total daily protein intake to help with cell repair and growth. Coconut flour also contains about 9 grams of healthy fats per 100 grams, these fats are mostly saturated called medium-chain triglycerides, which digest easily, provide instant energy, offer antiviral, antimicrobial and antifungal properties.

MATERIALS AND METHODS

The study conducted was to develop and assess the nutritional value of the gluten free sweet dish. Sweet dish made for the study was Coconut Ladoo and Coconut Barfi. Three types of coconut ladoos were prepared which were named as code A1, code A2, code A3 with same ingredients and Three types of coconut Coconut Barfi were prepared which were coded as code B1,B2,B3.

Ingredients of Coconut Ladoo

Code A1 – Rice flour=30gm, Powdered sugar=10gm, coconut flour=15gm, Chopped almonds, Chopped cashew nuts, Ghee

Code A2 - Rice flour=30gm, Powdered sugar=10gm, coconut flour=20 gm, Chopped almonds, Chopped cashew nuts, Ghee

Code A3 - Rice flour=30gm, Powdered sugar=10gm, coconut flour=25gm, Chopped almonds, Chopped cashew nuts, Ghee

Ingredients of Coconut Barfi

Code B1- Rice flour=20gm, Khoya=10gm Powdered sugar=10gm, coconut flour=15gm, Chopped almonds, Chopped cashew nuts, Ghee

Code B2- Rice flour=20gm, Khoya=10gm, Powdered sugar=10gm, coconut flour=20gm, Chopped almonds, Chopped cashew nuts, Ghee

Code B3- Rice flour=20gm, Khoya=10gm, Powdered sugar=10gm, coconut flour=25gm, Chopped almonds, Chopped cashew nuts, Ghee

Study Sample- The sample size was 30 subjects. This was done to get an impartial and a large opinion about the development of Coconut ladoo and coconut Barfi .It consists of two panels and the member of panel were Trained Panel and Semi Trained Panel.

Method of Data Collection- For this purpose a "Sensory Evaluation Sheet" was prepared and there was distributed to the subjects with the sample of Coconut ladoo and coconut Barfi. Then they filled the sensory evaluation sheet on the basis of taste flavor and acceptance of the developed Coconut ladoo and coconut Barfi using hedonic rating scale.

Preparation of the test

Sample

The three types of Coconut ladoo and the three types coconut Barfi with different quantity of coconut flour were made.

Test Schedule

The sample was kept without telling the Subjects/Panellist about all six coded sample. They just have to taste it and gave score according to the scale.

Sample Coding

The sample was coded in the numbers for code A- code A1, code A2 and code A3.

For code B- the sample code was B1, B2 and B3

Sample Amount

One piece of coconut ladoo and coconut Barfi from each sample was given to the Subject/Panel members for tasting.

Nutritional evaluation of most acceptable product

After conducting the sensory evaluation it was identified which sample code was best acceptable. The best acceptable code was taken for nutrition analysis. The best acceptable product was code A2 for coconut Ladoo in which the Coconut Flour amount was in 20gm. And for Coconut Barfi was code B3 in which coconut flour amount was 25gm. Test conducted were Protein and Ascorbic acid.

Test result per 100g of the product (Coconut Ladoo)

Moisture,%= 2.61, Fat,%= 33.8, Protein,%= 2.1, Carbohydrates,%= 61.23,Energy K.Cal/100g=561, Total minerals,%= 3.1

Test result per 100g of the product (Coconut Barfi)

Moisture,%= 3.10, Fat,%= 46.6, Protein,%= 2.91, Carbohydrates,%= 73.33,Energy K.Cal/100g=661, Total minerals,%= 4.22

CONCLUSION

Coconut flour is high in dietary fiber, protein and low in carbohydrates and calories. It has showed many benefits in lowering cholesterol, protect heart health , balances blood sugar, insulin levels and increases insulin sensitivity , reducing symptoms associated with diabetes to name a few. Products made from coconut flour were best accepted by the people, hence it can be considered as a good substitute for making various dishes.

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