



A STUDY ON DEVELOPMENT AND FORMULATION OF CUCUMBER SEED INCORPORATED CRACKER

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Abstract: Cucumber is a seasonal vegetable crop and it's mostly used in Indian traditional medicine since ancient times. The fruit is rich in minerals, Energy, Protein and Vitamins. Cucumber seeds having cooling effect on the body and they are used to prevent constipation and it's mostly used for burning sensation and intermittent fevers. It also rich in Fibers and Carbohydrates. Cucumber has a dehydration purpose so, that is used for refreshing. Wheat is a main cereal crop which plays a main role in human diet. It contains a main dietary source of essential mineral and vitamins. The product were prepared by cucumber seed powder, Wheat flour, taste enhancers like honey and powdered sugar then sesame seed and Olive oil. Cracker was developed in various proportion for evaluating the overall acceptability.

Key words: Cucumber, cucumber seed, Wheat flour, Cracker

LINTRODUCTION:

In Latin, the brickle vegetable was known as the cucumerem, Which also moreover passed up through old French as comcobre. Family name of the cucumber is Cucurbitaceae. In botanically, that's classified as a pepo, which is Hard external rinds and no internal divisions. The cucumber is began from India along with is closet living relative Cucumis Hystrix. Still, cucumber contains further than 30 species, in which two are economically important crops, videlicet cucumber and melon. Cucumber has began in Africa, China, India or in North East with domestication being latterly throughout the Europe. It was tamed about 3000 times ago, and is indigenous to India. Product of cucumber is the second largest of all cucurbits, where China, Iran, Russia, Turkey and United states represented 75 of the World product in 2005. In the U.S., cucumbers are produced in numerous countries across the country with Michigan, Wisconsin, South Carolina and Florida leading product. Product is specialize in fresh cucumbers, some countries specialize in pickling cucumber, and some countries specialize in both. All types of fresh cucumbers are produced in Florida. The cucurbitaceae consists of two subfamilies, Zanoioideae and Cucuebitoideae.

Cucumbers, like cantaloups, squash, pumpkins and watermelons are members of the cucurbit family of yield. They are vine crops and can be grown on the ground or on poles or casinos to suspend the fruit. There are close to 100 kinds, but common bones include the English, Garden, Persian, Mini and Bomb. The English cucumber is the longest, is narrow and is frequently retailed in a plastic serape. The skin of English cucumber is thin and frequently doesn't bear shelling. In discrepancy, the theatre cucumber has a dark waxy skin. The skin is typically removed by customers because of its bitter taste. Persian cucumbers are called burpless because they tend to be lower, sweeter and seedless. The skin is smoother, thinner and analogous to the English variety, doesn't bear shelling. These mini cucumbers are getting popular in the business due to consumer preferences. They've wide variety of skin colors ranging from unheroic to dark green. Lemon cucumbers are round and unheroic, suggesting failures, but they've sweet, have thin skins and contain seeds. It's an ideal summer and kharif vegetable crop, primarily grown for its comestible tender fruits, preferred as salad component, pickles, dessert fruit and a cooked vegetable. The fruit is rich in minerals, Thiamine, Niacin and vitamins. Fruit correspond of 80 comestible portion, which contains 95 percent water, 0.7 % proteins, 0.1 % fats, 3.4 % carbohydrates, 0.4 % filaments and 0.4 % ash. Among cucumber fruits, the peel and seeds, the most nutrient – thick part, contain phyto – nutrients, fibre and antioxidants, help immunity and help cancer. Either, seed contains oil, its helpful for brain development and smooth body: its also being used in Ayurvedic medications. That promoting hydration and can help your diurnal fluid requirements. The seed is high factor that determines the quantitative and qualitative characteristics of the crop.

Wheat is a member of lawn family that produces a dry, one planted fruit generally called a kernel. Over two dozen individual species have been characterized as members of the rubric Triticum. Of these, only four (T. monococcum L., T. turgidum L., T. timopheevii and T. aestivum). Wheat began in the “Cradle of civilization” in the Tigris and Euphrates swash vale, near what’s low Iraq. The Roman goddess, Ceres, who was supposed protection of the grain, gave grains their protection of their common name moment “cereal”. For the wheat is used for making chuck, pasta. It has been the principle cereal crop since 18th century. Wheat is grown in 42 countries in United states. Major component for cracker in unbleached flour from soft red or white wheat. Thw kinds of wheat may have soft or hard endosperm, red or white bran colour, downtime or spring growth habit. Wheat could allow for substancial increase in the situations of minerals, vitamins and nutrients and health promoting factors without negatively impacting crop yield. The bran comprises water – answerable fibre. It contains basically cellulose and pentosans, polymers grounded on xylose and arabinose, which are tightly bound to proteins. Protein and carbohydrate each represent 16 total dry matter of bran.

II. MATERIALS AND METHODS:

The chapter carried with the materials and methods related to “**The study on Development and Formulation of cucumber seed incorporated cracker**”. The project was carried out in Slcs galley, Department of Food Science and Processing Management, College of Subbalakshmi Lakshmi pathy College of Science.

2.1 Materials:

The ingredients for cracker preparation were procured from the local market in Madurai. The ingredients include cucumber seed, Wheat flour, sesame seed, salt, honey and powdered sugar. Stainless steel, Spoons, Plate, Microwave oven were used for the study. Liquid Petroleum Gas (LPG) was used to heating the food products. A weighing balance with 0.1 accuracy was used for the study to determine the weight of the raw materials. Hot air oven, Muffle furnace, Kel plus apparatus, SOCS plus apparatus are used to estimate the nutrients like Moisture, Protein, Fat and Ash. Aluminium foil is used as a packaging material for storing the cracker.

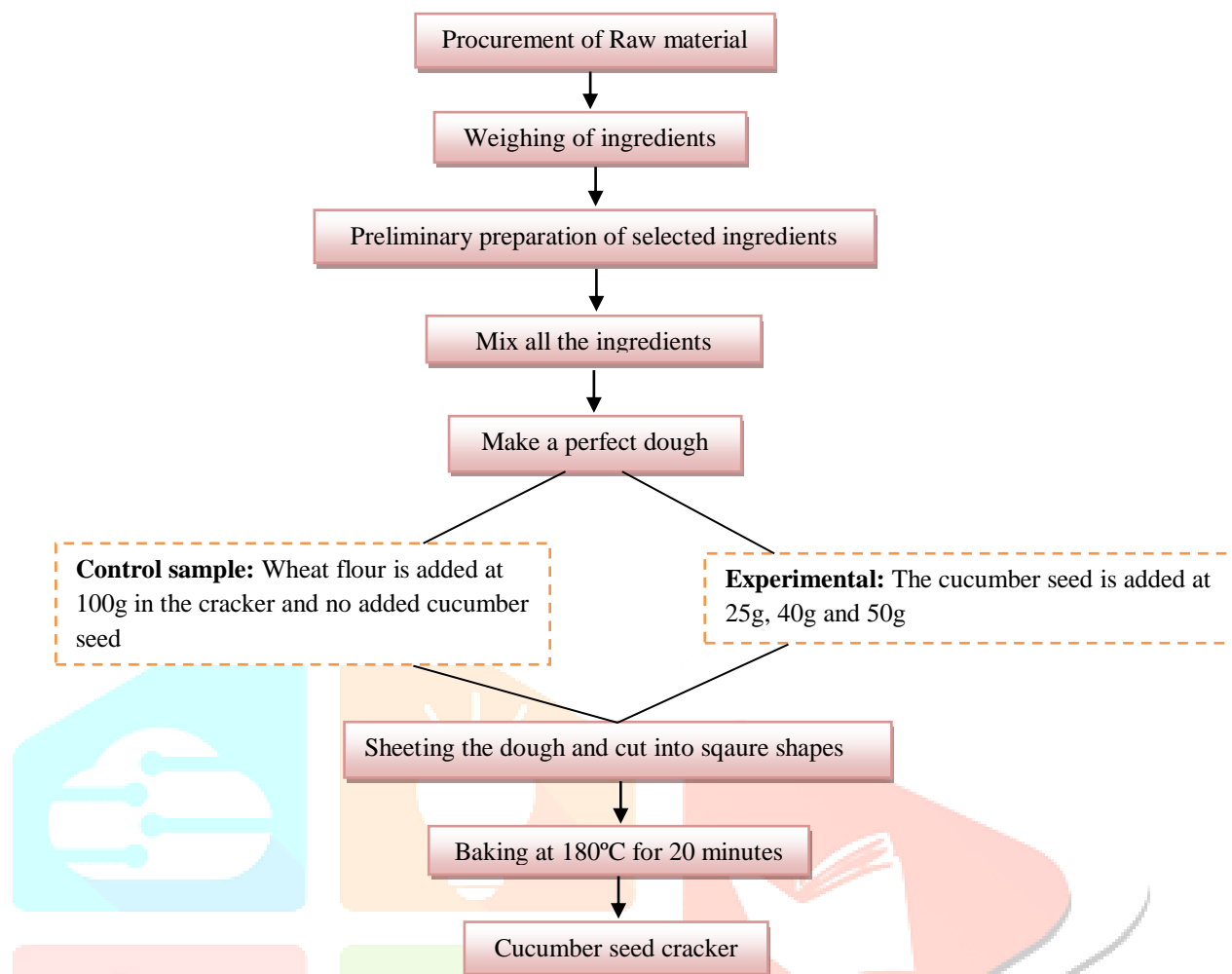
2.2 Methods:

The fresh cucumber seeds are allowed to dry for one day before usage or they can be roast by using a pan. The dried cucumber seeds are then transfer into mixer to get a fine powder. Mix all the ingredients for dough making. The ingredients are wheat flour, cucumber seed powder, sesame seed, powdered sugar, honey, Olive oil and salt. Perfect consistency of dough was left to rest for 2minutes. After that dough is rolled using rolling pin and cut into square shapes. The baking tray is greased using butter or butter sheet. The crackers are placed on the butter greased tray and then its baked at 180°C for 20 minutes when it reaches the crispy stage. The tray was kept at Ampient temperature and store in a air tight container.

The basic wheat cracker is prepared using 100g of Wheat flour and also adding Black sesame seed, Olive oil, Powered sugar, Honey and salt. The proportion of ingredients used to make Wheat cracker is given below.

table 1 - Proportion of ingredients used to prepare wheat cracker

S.No	INGREDIENTS	PROPORTIONS
1.	Wheat flour	100g
2.	Black sesame seed	1g
3.	Olive oil	20ml
4.	Powdered sugar	10g
5.	Honey	10g
6.	Salt	1g

PREPARATION OF CUCUMBER SEED:**figure 1 – flow chart for the preparation****III. SENSORY EVALUATION:**

Cucumber seed cracker was prepared in different proportions were evaluated by 20 semi trained panel members. This evaluation is conducted at the department Food Science and Processing Management, in Sensory evaluation laboratory. Each sample was rated on a scale of five for the attributes which were taste, colour, flavour, appearance and consistency. Using the score of the above attributes the overall acceptability of the product was determined. Developed cucumber seed cracker was evaluated using 5 points Hedonic scale rating. The acceptability of the product from the scale of 1 – 5 ranging from ‘like extremely’ to ‘dislike extremely’.

table 2 - Different composition of cucumber seed cracker

S.No.	INGREDIENTS	Quantity			
		CONTROL	CSC 1	CSC 2	CSC3
1.	Wheat flour	100g	75g	60g	50g
2.	Cucumber seed powder	-	25g	40g	50g
3.	Black sesame seed	1g	1g	1g	1g
4.	Olive oil	20g	20g	20g	20g
5.	Powdered sugar	10g	10g	10g	10g
6.	Honey	10g	10g	10g	10g
7.	Salt	1g	1g	1g	1g

CSC 1 – 25% Cucumber seed powder incorporated with wheat

CSC 2 – 40% Cucumber seed powder incorporated with wheat

CSC 3 – 50% Cucumber seed powder incorporated with wheat

IV. STANDARDIZATION OF CUCUMBER SEED CRACKER:

table 3 – standardized product

S.No.	INGREDIENTS	QUANTITY
1.	Wheat flour	75g
2.	Cucumber seed powder	25g
3.	Black sesame seed	1g
4.	Olive oil	20g
5.	Powdered sugar	10g
6.	Honey	10g
7.	Salt	1g

V. NUTRIENT ESTIMATION:

This nutrient analysis was conducted to estimate the nutrient composition of the developed product. In this study, Moisture, Protein, Total ash, Fat, Energy and carbohydrate were determined from cucumber seed cracker in Food analytical lab and research centre, Madurai.

5.1 Estimation of Moisture:

The Moisture content of the sample was determined by using Hot air oven at the temperature of 130°C.

5.2 Estimation of Crude Protein:

The protein content of the sample was determined by using Kelplus Digestion & Distillation Apparatus.

5.3 Estimation of Fat:

Fat content of the sample was determined by using Socsplus apparatus.

5.4 Estimation of Crude fiber:

The presence of crude fiber in the product is to evaluated by using Socsplus apparatus.

5.5 Estimation of Ash:

The total ash of the product was determined by using Muffle furnace at the temperature of 550°C to 600°C.

5.6 Estimation of Energy:

The energy is determined by multiplying the percentage of protein, fat, carbohydrates.

5.7 Estimation of Carbohydrate:

The carbohydrate value is calculated by adding the moisture, Protein, Fat and total ash then its subtract from 100. This is the method to evaluate the Carbohydrate value.

VI. PACKAGING MATERIAL:

For cucumber seed cracker use aluminium pouches as a packaging material. It has a barrier function to protect against Moisture, Oxygen and other gas from the food material. Use of these packaging material to cucumber seed cracker which extend the shelflife of the product.

VII. RESULT AND DISCUSSION:

The present study entitled “ Development and formulation cucumber seed incorporated cracker” was carried out the Department of Food Science and Processing Management.

The aim of this study is to develop and Formulate the cucumber seed cracker to evaluate the acceptability of product and analyse the presence of nutrients in the product.

7.1 Acceptability of the developed cucumber seed cracker:

The product were prepared in three variations. It is evaluated by 20 semi trained panel members using 5 points hedonic scale ratings. The highest mean score is obtained for CSC 1 is 4.5 with the comparison of CSC 2 and CSC 3 scores.

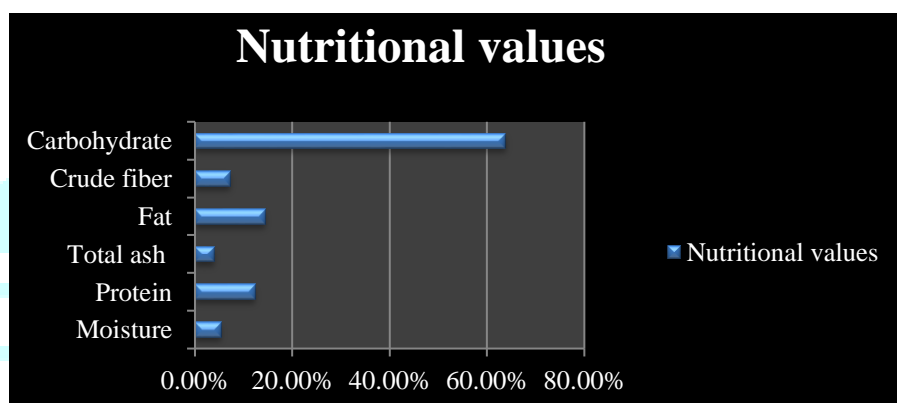
table 4 - Mean score obtained for the overall acceptability of cucumber seed cracker

Sensory Attributes	Appearance	Color	Flavour	Texture	Taste	Overall meanscore
CSC 1	4.55	4.5	4.5	4.5	4.55	4.5
CSC 2	4	4.1	4	4.1	4	4.04
CSC 3	3.7	3.6	3.7	3.8	3.6	3.7

7.2 Nutrient analysis of standardized cucumber seed cracker:

Nutrients were analysed in the cucumber seed cracker such as Moisture, Protein, Total ash, Fat, Carbohydrate, Crude fibre and Energy. The presence of Moisture in the product is 5.4% and the Protein is 12.4%. Ash content of the product is 4%. The presence of crude fibre is 7.3% and Carbohydrate is 63.8%. The Energy level of the product is 433.2 kcal/100g.

figure 2 – nutritional values of the standardized cucumber seed cracker



VIII. CONCLUSION:

Developed and Formulated cucumber seed incorporated cracker is more nutritious snack for the childrens. In this study, the product was prepared in three various proportion to evaluate the overall acceptability of the product. Five points hedonic scale rating is used for the evaluation purpose. Nutrient content of the standardized product were evaluated.

IX. REFERENCE:

- [1] TESTI ANGGELA SARI et al (2021), Overview of Traditional Use, Phytochemical and Pharmacological Activities of Cucumber (*Cucumis Sativus L.*), International journal of Pharmaceutical Sciences and medicine (IJPSM), Vol.6, pg: 39 – 49
- [2] PULOK K. MUKHERJEE., (2012), Phytochemical and therapeutic potential of cucumber, Elsevier, pg 227 – 236
- [3] HAI-CHUN JING et al (2000), Cucumber (*Cucumis sativus L.*) seedperformance as influenced by ovary and ovule position, Seed science Research, pg: 435 – 445
- [4] GIRISH KADDI., (2014), Effect of Growing conditions on seed yield and quality of Cucumber (*Cucumis sativus*) hybrid, Indian Journal of Agricultural Sciences 84 (5), pg, 76 -79
- [5] NAKUL GUPTA et al (2021), Challenges and Opportunities in Cucumber seed Production, International Journal of Current Microbiology and Applied Sciences, Vol-10, pg, 2135 – 2144.
- [6] THEJANI M. GUNARATNE et al (2015), Selection of best packaging method to extend the shelf life of rice crackers, International journal of Scientific & Engineering Research, Vol-6.
- [7] P. R. SHEWRY et al (2011), Improving the health benefits of wheat, Czech J. Genet. Plant Breed., 47: 169 – 173
- [8] VINITA SHARMA et al (2020), Cucumber (*Cucumis sativus L.*), Antioxidants in vegetables and nuts – properties and Health Benefits, 333 – 340.
- [9] DIXON, J., H. J. BARUN et al (2009), Wheat Facts and Futures. Mexico, D. F: CIMMYT.