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Organoleptic evaluation of virgin coconut oil

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Abstract

Deep frying is a cooking method in which food is submerged in hot oil or fat. This is normally performed with a deep fryer or chip pan. If performed properly, deep frying does not make food excessively greasy, because the moisture in food repels the oil. The hot oil cannot go against the direction of this powerful flow because the water vapour pushes the bubbles toward the surface. The Virgin Coconut Oil (VCO) is easily digestible and absorbed in the intestine and has an energy boosting effect, deep fried in virgin coconut oil are super healthy and delicate and tasty. Virgin coconut oil is super healthy oil, which maintains its healthy properties and which doesn't become harmful when heated. Based on the incredible benefits of virgin coconut oil towards health in human, the present study was under taking to develop health products. These health products from virgin coconut oil can be prepared from locally available resources using simple processing methods at household level.

Keywords: Virgin coconut oil, deep frying, health benefits, products

Introduction

However, if the food is cooked in the oil for too long, much of the water will begin to penetrate the food. The correct frying temperature depends on the thickness and type of food, but in most cases it lies between 175^o and 190^oC some fried foods are given a coating of batter or breading prior to frying. The effect of these is that the outside of the food becomes crispy and browned. While the inside becomes tender, moist and steamed (Herve, 2006) ^[1] Mohamed (2009) ^[2] says frying batters are used to add value to a product by improving texture, fulvous, weigh and volume and reducing water loss during frying which in turn, less as oil absorption. The physical characteristics of fried butters were studied using model system based on rice flour. Crispness was positively correlated with amylase content, while oil absorption was negatively correlated with amylase content.

According to Peter Paul *et al.* (2005) ^[3] the recorded beneficial effects of virgin coconut oil are exceptional, many people be lived that VCO would contribute to development of heart disease. Through many independent studies it has been demonstrated that VCO has impartial effect on cholesterol levels as the MCFA are turned in to energy immediately after consumption.

Virgin coconut oil a great way to build immunine system. It is a helps the body to prevent cancer causing germs and attack cancerous cells.

Virgin coconut oil allows our bodies to more readily absorb nutrients that are crucial to soft, smooth skin VCO helps to soft the skin and protects it from damaging.

VCO has so many health benefits, so that the present research was done on virgin coconut oil. It is compared with other cooking oils.

Methodology

The major focus of the present study is on the virgin coconut oil. It has so many health benefits, so that this oil has to take cooking oil and collected studies on the virgin coconut oil. It is used an ingredient to fruit shakes and smoothies. Raw or pure coconut oil can be taken as ghee form and a good food seasoning and serves as healthy cooking oil, so that the investigator do a research work on this oil.

The virgin coconut oil is compared with other cooking oils. That are commonly used in the household level, they are sunflower oil and groundnut oil. Because these two oils slightly adverse effect of health compare to VCO.

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Formulation and standardization of products with these three oils done in the laboratory conditions and doing a chemical analysis of oils.

Product Development: The Development of product was done by standardization. The basic recipe was tried out initially and then used these three oils for three times, i.e. fresh oil, second time heating and third time heating oil to standardized each recipe. These recipes were presented to panel members for sensory evaluation and the evaluated product is standardized.

Preparation of Bonda Ingredients

Basin flour	-	250gm
Rice flour	-	30gm
Salt	-	5gm
Onions	-	50gm
Curry leaves	-	25gm
Chillies	-	10gm

Method of preparation: Take 250 gm of Basin flour add rice flour, chopped onions, curry leaves, chillies and salt. By adding water slowly mix the batter take a pan and pour the oil and heat it. After seeing smoke point round balls and put into frying pan and bondas are deep fried in oil.

As per the above method 3 variations of oils i.e., fresh oil, 2nd time heating oil, 3rd time heating oil has done with 3 different oils they are virgin coconut oil, sunflower oil and groundnut oil.

Test used for sensory evolution

Paired difference test: The presentation of two samples simultaneously is referred to as the paired comparisons method pairs with the same and different samples are presented the question is posed whether the sample in each pair are identical or different. In a three sample test three samples containing three stimuli are presented, and the judge has a choice of three responses, all identical and all

different. If the judge responds that one is different he is asked to indicate which one.

The evaluation was done panel of 8 judges sensory evaluation is done for all the three variation of oils.

Result and Discussion: According to studies, virgin coconut oil is considered as a functional food, because aside from providing nourishment for the body it is also used to treat critical clinical conditions, virgin coconut oil is non-toxic and does not have side effects. Sunflower oil is the non-volatile oil. Pressed from sunflower seeds. Sunflower oil is commonly used in foods as frying oil and in cosmetics. The Groundnut oil is being high in mono unsaturated fatty acids. It is considered to be the finest all round oil for cooking and frying (Trupati kamat, 2006) [5].

The products were prepared with virgin coconut oil, sunflower oil and groundnut oil were evaluated for their nutrient composition and acceptability of panel judges.

Nutrient composition of sunflower oil, groundnut oil and virgin coconut oil

Virgin coconut oil is colour less and has a mild to intense coconut flavour and is rich in lauric fatty acid (47-53%). It also contain vitamin 'E' at 5gm l kg (Rethinam, 2004). The most important and effective of the MCFA is lauric acid. Sunflower oil contains predominantly linoleic acid in triglyceride form. Sunflower oil is translucent in vitamin 'E' content (srinivas kanade, 2009) [4]. It is a combination of monounsaturated and polyunsaturated fats. Groundnut oil is most commonly used when frying foods. The use of groundnut oil is a source of edible oil, high in protein content and vit A, B. The investigator was observe the nutritive values of three oils the energy is similar in three oils. The carbo hydrates are high in VCO compared to groundnut oil. In sun flower oil is less in proteins. The total fat content of three oils is similar but just less in virgin coconut oil pollinated fats is high in sunflower oil compare to groundnut oil and VCO. Vitamin 'E' content is high in VCO compared to sunflower oil. These results are shown in table 1.

Table 1: Nutritive Values of Three Cooking Oils per 100gm

S. No	Nutritional Information	Sunflower Oil G	Groundnut Oil G	Virgin Coconut Oil G
1	Energy	884 K. cal	900 K. Cal	900 K. cal
2	Carbohydrates	-	18.6	52%
3	Protein	-	26	42
4	Total al fat	100	100	96.46
5	Saturated fat	9.1	89.5	20.9
6	Monounsaturated fat	25.1	7.8	47.9
7	Polyunsaturated fat	66.2	2.0	29.9
8	Vitamin 'E'	41.08 mg	-	80mg

Reference

Nutritive value of Indian foods" by C. Gopala BV. Ramasartri

Sensory Evaluation of Bonda Prepared with Three Oils

Three types of oils (sunflower oil, groundnut oil, virgin coconut oil), is used for the preparation of bonda. It was evaluated by 8 trained panel members using score card for various sensory attributes. The mean sensory scores and the ANOVA results are presented in table-2, 3.

Table 2: Mean sensory scores of bonda prepared with three oils

Attributes	Code no. of the recipe		
	A	B	C
Appearance	5.66	5.66	6.70
Taste	6.32	6.48	6.55
Texture	5.82	5.74	6.88
Flavour	6.21	6.29	5.84
Greasyness	5.41	6.50	6.56
After taste	6.58	6.65	6.42
Overall acceptability	6.76	6.81	6.75

A- Sunflower oil, B- Groundnut oil, C- Virgin coconut oil

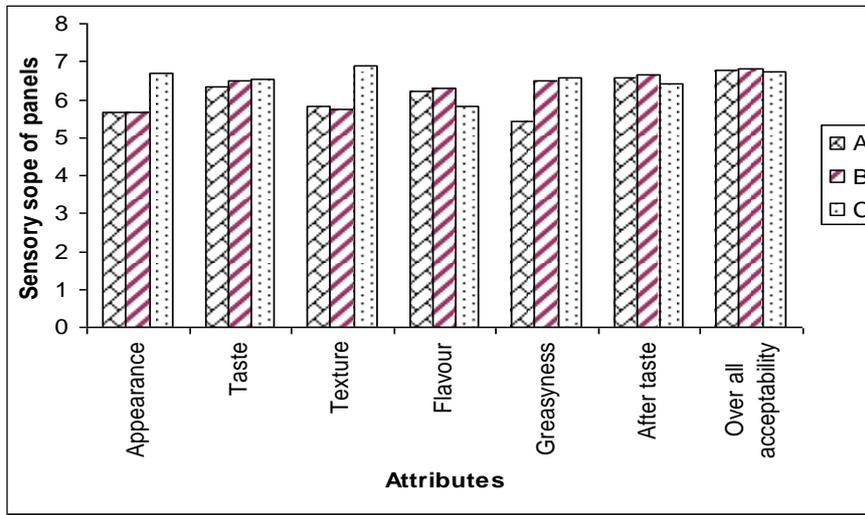


Fig 1: Over all Profile of the Recipe-Bonda Prepared with Three Oils

The average scores for each attributes to the product were calculated. The mean value of appearance is higher in variation ‘C’ compared with other two variations. The mean value of taste is equal in three variations. The texture mean value is high in variation ‘C’ compared with other two. The flavour mean value is low in variation ‘C’ compared with

other two variations. The greasyness mean value is least in variation ‘A’ compared with other two variations. The value of after taste and overall acceptability are equal in three oils. These differences are statistically not proved.

Table 3: Analysis of sensory scores of Bonda prepared with three oil ANOVA

S. No.	Attributes	Variations	Mean \pm SD	‘F’ value
1	Appearance	A	5.66 \pm 1.88	0.69@
		B	5.66 \pm 2.22	
		C	6.70 \pm 1.55	
2	Taste	A	6.32 \pm 1.20	0.05@
		B	6.48 \pm 1.54	
		C	6.55 \pm 1.11	
3	Texture	A	5.82 \pm 1.31	1.71@
		B	5.74 \pm 1.01	
		C	6.88 \pm 1.45	
4	Flavour	A	6.21 \pm 1.18	0.22@
		B	6.29 \pm 1.43	
		C	5.84 \pm 1.41	
5	Greasyness	A	5.41 \pm 0.84	1.32@
		B	6.50 \pm 2.06	
		C	6.59 \pm 1.35	
6	After taste	A	6.58 \pm 1.54	0.05@
		B	6.65 \pm 1.38	
		C	6.42 \pm 1.10	
7	Overall acceptability	A	6.76 \pm 1.28	0.00@
		B	6.81 \pm 1.33	
		C	6.75 \pm 1.29	

Note: ** - Significant at 0.01 level,
 * - Significant at 0.05 level,
 @ - Not Significant

Among seven attributes appearances, taste, texture, flavour, greasyness, after taste, overall acceptability are statistically not significant differences at 0.05 level. Heating generates chemical changes both in the oil that we are using to fry, as well as in the food. The changes are quite noticeable. (Thampan, 2009).

Conclusion

Hence it can be concluded locally available ingredients and simple processing techniques which are nutritionally balanced. The acceptability of the products are found to be quite higher. Thus the products prepared with virgin coconut

oil are found to be quite satisfactory with regard to nutrient composition and acceptability compared with other cooking oils. So that it can also be used as cooking oil.

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