



VOLARIZATION OF ONION THROUGH FORMULATION AND PRODUCTION OF READY TO USE CUBES WITH THE SPICES

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ABSTRACT

The present study was conducted to develop the ready to cook spicy onion cubes in order to reduce the cooking time and to store the onions over a long period of time, with the nutritional properties enriched spices. The spicy onion cubes were developed in three different variations like variation I ,II, and III. These variation were subjected to sensory evaluation by semi-trained panelists. The selected variation of spicy onion cubes was evaluated for the quality like physio-chemical, nutrient and antinutrient analyses of the spicy onion cubes was carried out along with that the toxicity and microbial analysis were also done. The cost was also estimated. According to the semi trained panalists the result for sensory evaluation was highly accepted. The organoleptic scores for variation I has gone highest mean score for all sensory attributes namely appearance (4.7), colour (4.5), flavor (4.56), texture(4.8), taste(4.7), overall acceptability(4.8) in comparision with other variations. As these cubes contains onion with spices which has enriched nutritional properties, and even more health benefits, which will reach to the consumers within a short span of cooking time by giving the extraoridinary taste to the recipes. So it act as a good and healthy ready to cook ,product as it can be used for any recipes like in gravy, chutney ,briyani etc.

Key words: onion, garlic, spices, ready to cook, sensory and nutritional quality.

INTRODUCTION

Now a days there were an increased demand for food products due to the drastic increase in population (**Luclovic.A. L and Philippe, 2011**). Thus in order to maintain and satisfy the consumer needs, the innovations from the food product development is required, even people demands for fresh and quality products for their cooking. Over the previous decade, the market and product variety have changed dramatically, and many new enterprises have entered the food industry (**Ferdous, &Hossain, 2015**). However, not only for cold plates or side dishes, but also for more complex dishes, there is a growing demand for a variety of items that

can suit a variety of client needs (**M.L. Amodio et al., 2013**). Food consumes more than half of Indian consumers' money, compared to one-third of global consumers' income. With the rise of dual-income nuclear families in urban India, the ready-to-cook food market has absorbed the interest of everyone in the food industry. Thus the spicy onion cubes, was developed for those who are in need of onions which should be fresh and can be stored over a long period of time. Hence in order to prevent the highly sensitive interaction between the volatile compounds of onion and human eyes secretes tears while peeling or chopping. (**Lanzotti 2006**). Hence it helps to skip the

process which was generally done by the users like washing, peeling, cutting etc. Even though it was prepared already it continuously remains fresh and provides nutritional and health benefits to the consumers. The production process of spicy onion cubes and its benefits are clearly explained in this study.

REVIEW OF LITERATURE: ONION

The small bulbed onion is being used for all the local cuisines all over the world (Sulistio et al., 2015). It was originated from South East Asia and reached to India, which was followed by the other countries. Since ancient times, the onion (*Allium cepa* L.) has been valued as a cultural and medicinal plant. It is the second most extensively farmed vegetable after the tomato, and it is a vegetable bulb crop that is familiar to most cultures and is consumed worldwide (FAO, 2012).

Nutritional properties of onion Generally a small portions of vitamins, minerals and other essential nutrients comes from fruit and vegetables, which we are being taken regularly from the diet (Rico et al., 2007). Thus the onion contains many benefits on health due to their nutrients presented in it (Mashad HM et al., 2019).

NUTRIENTS	A M O U N T
Energy	166kJ (40 kcal)
Carbohydrates	9.34 g
Fat	0.1 g
protein	1.1 g

Table I: nutritive value of onion.

Health benefits of onion.

It was said that our diet should contain *Allium* vegetables especially onion, which contains different health benefits. Even modern medicine recognises the therapeutic benefits of onions. It can be used to treat heart disease, diabetes, and inflammatory illnesses. Onions are, and should be, a staple of our everyday diet. The therapeutic dosages in various forms are typically 50 to 150 g of raw onion per day.

GARLIC

Allium sativum L., a member of the Alliaceae family, has long been regarded as a valuable

spice and a popular cure for a variety of diseases and physiological abnormalities. Due to its biological active component allicin and its derivative, garlic has been used as a medicine to cure a wide range of diseases and conditions. Garlic, in addition to contributing flavour to foods, contains a variety of important minerals, vitamins, and other chemicals that are beneficial to human health. In addition to vitamins, it is high in sugar, protein, fat, calcium, potassium, phosphorus, sulphur, iodine fibre, and silicon. It has a high nutritional value.

PEPPER

Black pepper, *Piper nigrum* L. is regarded as the king of spices all across the world, due to its pungent principle piperine. The whole peppercorn of *Piper nigrum* or its been utilised for medical purposes for thousands of years. *Piper nigrum* is utilised as a medicine, preservative, insecticidal, and larvicidal control agent in many forms, including secondary metabolites (Nisar Ahmed, 2012). pepper seeds contain 66.5 g of carbohydrate, 10 g of protein, and 10.2 g of fat, as well as a high concentration of minerals like calcium (400 mg), magnesium (235.8-249.8 mg), potassium (1200 mg), and phosphorus (160 mg), and lower concentrations of sodium, iron, and zinc. (Tainter DR).

CUMIN SEEDS

Cumin (*Cuminum cyminum*) is a flowering plant in the family Apiaceae, native from the east Mediterranean to East India. In India cumin is known in as 'jeera' or 'jira'. Cumin has also been used on meat in addition to other common seasonings. The spice is extensively used in the cuisines of the Indian subcontinent. (Peter, 2001 and Raghavan, 2007). Cumin seeds are nutrient-dense, with plenty of fat (particularly monounsaturated fat), protein, and dietary fibre. Cumin seeds are high in vitamins B and E, as well as other nutritional elements, particularly iron. Cumin is used to treat injuries and bleeding, as well as as an antiseptic. Cumin is a stimulant as well as a beneficial plant for digestive problems. pancreatic enzyme production that aids in food absorption, Increase the liver's ability to cleanse the body by introducing it into the system. (Bettaieb et al. 2011).

METHODOLOGY

SELECTION AND PREPARATION OF SPICY ONION CUBES :

Food ingredients namely onion, garlic, pepper and cumin seeds. Small bulbed onions (Allium cepa) - [co (ON)5], Garlic (Allium sativum), The other spices like black pepper (Piper nigrum) and Cumin seeds (Cuminum cyminum) were selected for the development of the product. Onion and garlic were purchased from the local market at Tirupur. The other spices like pepper, cumin seeds and wheat flour were purchased from D mart at tiruppur.

FIGURE 1:



GARLIC (*Allium sativum*)



Small bulbed onion - co (ON) 5
(*Allium cepa*)



Cumin seeds (*Cuminum cyminum*)



Black pepper (*Piper nigrum*)

The onion and garlic were procured from the market in which the damaged, spoiled etc should be discarded before buying and peeling. After peeling of onion and garlic it has been washed thoroughly in the water. Then they are grinded into a fine paste. After that the spices like pepper and cumin seeds are grinded into a fine powder, by mixing both the grinded paste and powder, it was cooked along with a 5ml of wheat flour diluted water, in order to reduce the moisture content in the onion garlic paste. Then, after cooking it was kept in a room temperature for few minutes and then transferred into an ice cube tray and allowed to freeze for 8-9hrs at 0 °C to get a fine spicy onion cube.



FIGURE 2: Developed spicy onion cubes

STANDARDIZATION OF SPICY ONION CUBES :

The product was standardized in terms of the amount of ingredients procedure and serving size. Standardization was done with three variations like variation I which contains 70:20:5:5 of onion:garlic:cumin seeds:pepper respectively, variation II has 70:15:5:10 and the III variation contains 70:10:5:15 respectively and obtain reproducible results for the purpose of standardized products and number of preliminary trials were conducted like incorporating the spicy onion cubes in tomato chutney, brinjal gravy, potato fry etc.

RESULT AND DISCUSSION:

ORGANOLEPTIC EVALUATION OF THE SPICY ONION CUBES:

Organoleptic evaluation of the developed spicy onion cubes prepared from the small onion co [ON]5, garlic, pepper and cumin seeds were assessed by 30 semi-trained panel members using the score card with five-point hedonic rating scale.

TABLE II: MEAN SENSORY SCORE OF THE DEVELOPED SPICY ONION CUBES

CRITERIA	V1	V2	V3
APPEARANCE	4.7± 0.5	4.3± 0.6	4.1± 0.8
COLOUR	4.5± 0.5	3.7± 0.7	3.5± 0.6
FLAVOUR	4.56± 0.5	3.6± 0.4	3.6± 0.6
TEXTURE	4.8± 0.3	3.53± 0.6	3.5± 0.6
TASTE	4.7± 0.4	3.56± 0.5	3.4± 0.6
OVERALL ACCEPTABILITY	4.8± 0.4	3.56± 0.5	3.5± 0.6

From the above table it is clear that organoleptic scores for the variation I had got highest mean scores for all the sensory attributes Appearance (4.7± 0.5), Color (4.5± 0.5), flavor (4.56± 0.5), Taste (4.7± 0.4), Texture (4.8± 0.3) and Overall acceptance (4.8± 0.4) in comparison with other variation II and III.

S.NO	NUTRIENTS	NUTRITIVE VALUE INITIAL STAGE (mg)	NUTRITIVE VALUE FINAL STAGE (mg)
1.	Calcium	29	28.47
2.	Magnesium	0.12	0.11
3.	Manganese	0.27	0.21
4.	Potassium	113	111

nutrient analysis is done for the selected variation I. The result of analysis is given in the table.

TABLE V: VALUES OF THE NUTRIENTS ANALYSES

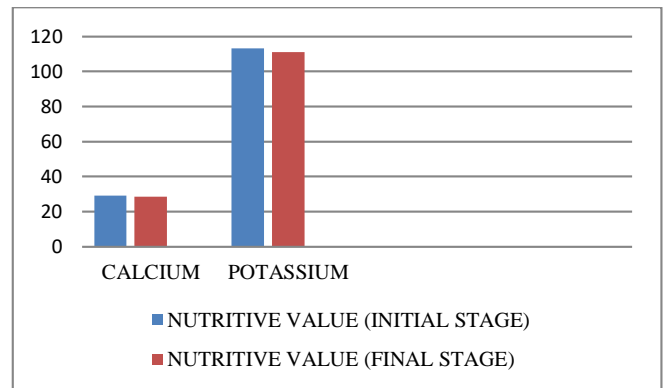


FIGURE 4: Calcium and potassium content

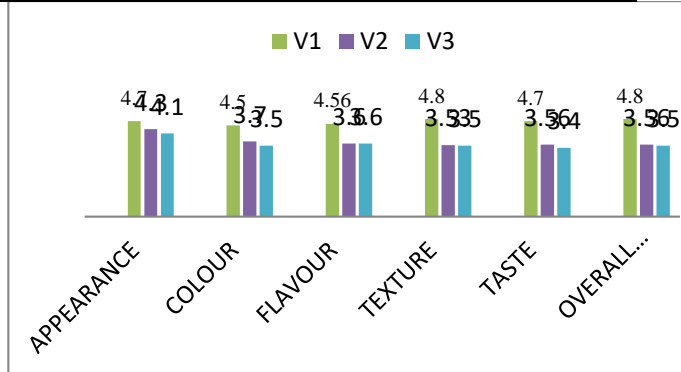


FIGURE 3: SENSORY EVALUATION OF SPICY ONION CUBES.

PHYSICAL ANALYSIS OF THE SPICY ONION CUBES:

TABLE III: LENGTH, BREADTH AND WEIGHT OF THE SPICY ONION CUBES

S.NO	CRITERIA	SAMPLE
1.	Length	4 cm
2.	Breadth	2 cm
3.	Weight	20 g

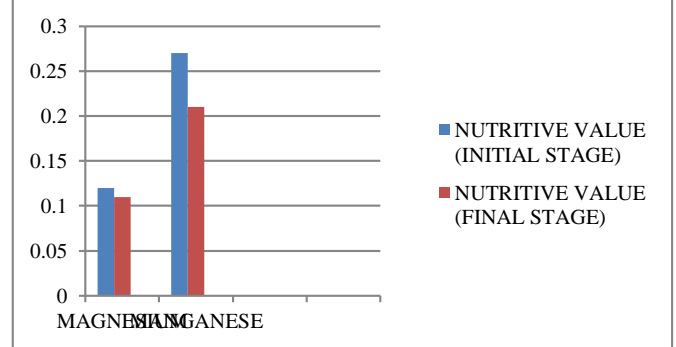


FIGURE 5 : magnesium and manganese content.

PHYSIO CHEMICAL ANALYSIS OF THE SPICY ONION CUBES:

The physiochemical analysis constituents such as moisture, ash and insoluble ash were carried out using the standard procedure for the developed spicy onion cubes.

TABLE IV: VALUES OF MOISTURE, ASH AND INSOLUBLE ASH

S.NO	CRITERIA	SAMPLE
1.	Moisture	76%
2.	Ash	13.6g or 1.36%
3.	Insoluble ash	0.19g or 0.01 %

S.NO	ANTI NUTRIENT	SAMPLE
1.	Oxalate	6.23 mg

ANTI NUTRIENT ANALYSIS OF THE SPICY ONION CUBES:

The anti nutrient analysis is done for the selected variation I. The result of analysis is given in the TABLE VI: VALUES OF THE ANTI NUTRIENT ANALYSES

NUTRIENT ANALYSIS OF THE STANDARDIZED SPICY ONIONCUBES:

S.NO	TOICITY	SAMPLE
1.	Sulfoxide	3.19mg

TOXICITY ANALYSIS OF THE SPICY ONION CUBES:

TABLE VII: VALUE OF THE TOXICITY ANALYSED
The toxicity analysis is done for the selected variation I. The result of analysis is given in the table

The nutrients like calcium, potassium, magnesium and manganese were analysed in both initial and final stage using the standard procedures for the selected variation I. The

STORAGE STABILITY AND MICROBIAL ANALYSIS OF THE SPICY ONION CUBES:

The storage stability was important for the shelf life analysis of the developing food products, and also it indicates the microbial growth which is occurred in the storage period of greater than one month for the spicy onion cubes.

MICROBIAL COUNT OF THE SPICY ONION CUBES: TABLE VIII

S.NO	CRITERIA	SAMPLE
1.	Total bacterial count (After 30 days of shelf life period)	$5 * 10^6$ cfu/g

CONCLUSION:

Thus by introducing the spicy onion cubes to the market during this period is to satisfy the demand among the people, who are in need of onions which should be fresh and can be stored over a long period of time without any preservatives and without much nutrient loss. Hence this will enable the consumers as economically effective and allow the users to gain time in labour. Even the cost of the product was also affordable by all group of people and contributing towards the industrial growth by promoting the technological innovation through research.

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