



Standardization of flavour coating in cashew Kernel

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ABSTRACT :

*The cashew, *Anacardium occidentale* L., belongs to the Anacardiaceae family of plants. The experiment was performed with various blends of spices and standardization was carried out. Spices such as cinnamon, cardamom, cumin, black pepper, coriander powder etc were used considering their health benefits. Health benefits such as they boost the immune system, act as an antioxidant, remove gallstones, and beneficial for anemia. They are good sources of healthy fats that are necessary for our body to absorb fat-soluble vitamins. This is rich in vitamin C, so it can be used for skin problems like acne, flawless freckles, skin lines and protects from aging. Flavoured cashew nuts using various spices were prepared and sensory evaluation was carried out using standardize method. Proximate analysis of this flavoured cashew nuts was carried out and different parameters like protein, fiber, fat, moisture, ash and insoluble ash was estimated. Among this tangy tomato showed highest protein content and fiber content i.e. 21.43% and 1.30% followed by green chilli and tandoor and tandoor showed highest fat content i.e. 43.37% followed by green chilli and tangy tomato. Standardization of various flavours such as tandoor, tangy tomato and green chilli was carried out and comparatively the sensory evaluation stated tangy tomato was found to be best followed by green chilli flavour and tandoor flavour.*

Keywords: *Flavoured cashew nuts, standardized flavours, spice blend, *Anacardium occidentale* L., cashew kernel*

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INTRODUCTION

One of India's most significant plantations produces cashews, which are members of the family Anacardiaceae and its species *Anacardium*. 32 nations worldwide farm the cashew tree (*Anacardium occidentale* L.), with Brazil, India, Vietnam, and Nigeria serving as the primary cultivating nations. (2010) Honorato and Rodrigues [1]. It is originated in Brazil and was brought to India by the Portuguese in the sixteenth century. Cashew was formerly primarily thought of as a crop for afforestation and soil binding to stop soil erosion, but it is now one of India's key dollar-earning crops.[2]

The medicinal value of cashew kernel is higher. It is a protein, carbohydrate, and fat storehouse. The cashew kernel is a plentiful source of protein (21%), lipid (47%), carbohydrate (22%), fiber (1.3%), and mineral matter (2.4%). The dietary fiber that is already present in cashew kernels helps to reduce serum cholesterol and the risk of coronary heart disease. It reduces blood sugar because it contains a lot of monounsaturated fatty acids. It contains a lot of potassium and phosphorus. Selenium, which aids in cancer prevention, is present in it. It is the essential dietary supplement for young children, expectant women, and nursing moms. Vitamin E, which boosts immunity and may serve as a naturally occurring antioxidant, is found in cashews. The cashew kernel has a high nutritional value and is in high demand internationally because it can be used to make confections, food preparations, and snacks. Currently, cashew kernels are used to make value-added products such as cashew kernel powder, cashew laddu, cashew chikki, cashew ice cream, cashew burfi, and cashew pedha. However, only a little amount of research has been done so far on the flavour of cashew kernels. Cashew kernels with flavour coatings are in high demand on the market. The processors and farmers will profit more if the right technique is created to flavor-coat cashew kernels.[2]

The largest cashew nut-producing states in India include Maharashtra, Kerala, Andhra Pradesh, Orissa, Karnataka, Tamil Nadu, Goa, and West Bengal. In India, there are 1125,000 ha of cashew plantations, with a total yield of 703 thousand MT [3]. India is the world's largest producer of raw

cashew nuts, accounting for 20% of total production. In Maharashtra, cashew production and productivity are at their highest. The state of Maharashtra produces roughly 181.10 thousand metric tonnes of cashews on an area of 191.50 thousand acres. 2019 (Anonymous) [3]. In Maharashtra, cashew productivity averages 1.5 t/ha. One of the world's greatest cashew-growing belts, the Konkan region on the western coast of Maharashtra, covers 1,73,601 acres. The Konkan region of Maharashtra, which includes the districts of Thane (10783 ha), Raigad (19088 ha), Ratnagiri (89999 ha), and Sindhudurg (53731 ha), is where most of the state's cashews are grown[4].

Due to their high energy and nutritional content as well as their enormous diversity of flavours and distinctive taste, nuts have played a significant role in the diets of many nations and civilizations for generations. Due to their unique nutritional makeup, tree nuts have also been associated with a number of health benefits in recent years. Tree nuts are well known for having a high proportion of mono- and polyunsaturated fatty acids (FA), as well as a wide range of vitamins, minerals, amino acids, phytosterols, and a significant amount of fiber. Consumption of nuts included in a balanced diet was linked to a decreased risk of diabetes and metabolic syndrome, as well as cardiovascular disease and mortality. Estruch et al. (2013) recently highlighted the advantages of including nuts in a healthy diet over a low-fat diet, confirming that the incidence of major cardiovascular events and mortality is 30% lower for people consuming a Mediterranean diet supplemented with a handful of nuts per day as opposed to those who are advised to consume a low-fat diet.[5]

In the ancient and mediaeval worlds, spices were among the most valuable commodities traded. While traditional healers and herbalists have employed plants for millennia, scientists have only recently started to investigate the therapeutic properties of everyday spices and herbs. A research study indicates that spices, which are abundant in antioxidants, are also powerful inhibitors of tissue damage and inflammation brought on by excessive blood sugar and circulatory lipid levels. These are able to prevent the creation of molecules that aid in the harm brought on by metabolic diseases because of their high phenol content. Spices are dependable sources of antioxidants and other potentially bioactive components in the diet because they have a very low calorie content and are reasonably priced. This review's main emphasis is on the crucial role that spices play in the management of heart diseases, acting as both preventative and curative agents. Overall, the article makes the case that "adding spice to our lives" can be a tasty and practical method to keep your heart healthy. [6]

MATERIAL AND METHODS

The experiment was carried out at laboratory of department of food processing and packaging, Yashvantrao Chavan Institute of Science, Satara. During the year 2022-2023. The experiment was conducted with three treatments. Product was prepared and analyzed for different Physical, chemical and sensory attributes.

Collection of raw materials and Equipments used

All the material required for the experiment were purchased from the local market of Satara. Cashews and other required spices and condiments.

The tray dryer available in Department of Food Processing and Packaging Yashvantrao Chavan Institute of Science Satara, were used for drying of flavoured cashew kernels. Hot air oven method, Acid-alkali hydrolysis method, Soxhlet method, Kjeldhal method, Muffle furnace were used for determining of moisture, fiber, fat, protein, Ash & insoluble Ash.

Materials

Cashew, Tomato powder, Garlic powder, Onion powder, Chilli powder, Cumin powder, Coriander powder, Ginger powder, Cardamom powder, Cinnamon powder, Black pepper, Salt, Sugar, Clove, Dried mango powder, Turmeric, Green chilli paste.

Methods

Raw material collection.

Standardization of flavour coating in cashew Kernel.

Sensory evaluation

Standard preparation

Collection of cashew Kernels and various spices

Weight all the ingredients

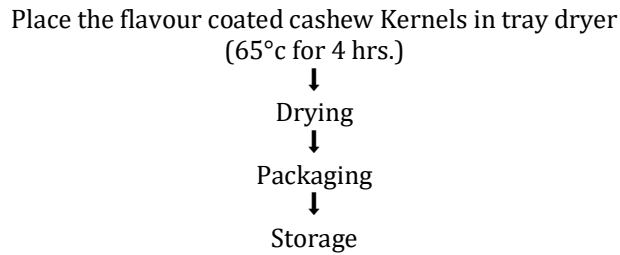


Roast the cashew Kernels and spice blend



Add brine solution for proper coating





Proximate analysis

The proximate analysis of various flavour coating cashew Kernels was carried out to ascertain the level of various biochemical constituents

Estimation of moisture content:

Moisture content of the flavour coated cashew Kernel was estimated by using A.O.A.C. (1975) [7]

Estimation of ash content:

Ash content of the crushed flavoured cashew sample was estimated using Muffle Furnace. The sample was weighed and incinerated to remove carbon molecules from the sample and ignited at 550°C in the Muffle Furnace for 5 hours.

Estimation of protein content:

The protein content of the product was evaluated by using Kjeldhal method. The Nitrogen Content of the sample was determined by Digesting, Distillation and Titration against the working standard and the amount was multiplied by a factor of 6.25. Methods described in A.O.A.C. (1990) [8].

Estimation of fat content:

Fat Content of the product was evaluated by using the Soxhlet Method described in A.O.A.C manual (1990) [8]

Estimation of carbohydrate content:

The Carbohydrate (%) was determined by difference i.e. Subtracting from 100 [9].

Estimation of crude fiber:

Crude Fiber was evaluated by Acid-Alkali Hydrolysis method described in A.O.A.C Anonymous, [10]

Sensory evaluation

The sensory qualities in terms of colour, flavour and texture, aroma were assessed by panel of 10 judges with 9 point Hedonic scale score [11].

RESULTS

Table 1: Weight of cashew kernels (g) before and after coating

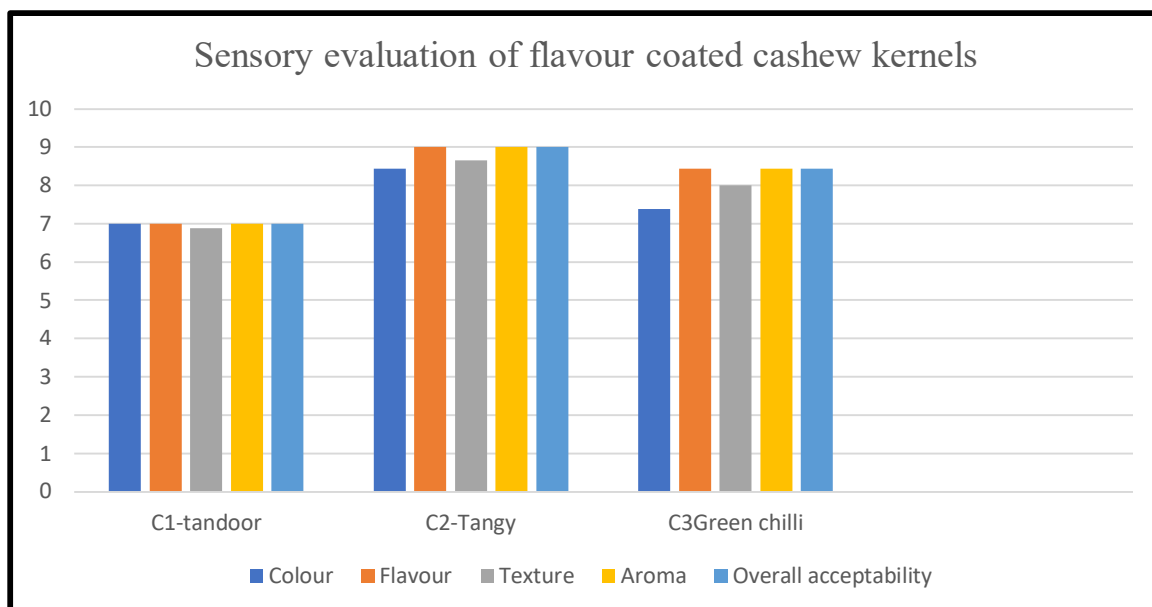
Coating treatments	Initial weight (g) (before coating)	Weight after coating (g) (After drying)
C1: Tandoor	53.50	48.20
C2: Tangy tomato	52.25	48.35
C3: Green chilli	52.75	49.95

Table 2: Chemical composition of flavour coated cashew kernel

Coating treatments	C1: Tandoor	C2: Tangy tomato	C3: Green chilli
Moisture (%)	2.64	2.33	2
Protein (%)	21.12	21.43	21
Fat (%)	44.40	43.37	44.15
Carbohydrate (%)	25.44	28.9	26.24
Fiber (%)	1.38	1.30	1.27
Ash (%)	2.50	1.48	2.67
Insoluble ash (%)	2.52	1.49	2.70

Table 3: Sensory evaluation of flavour coated cashew kernels

Coating treatments	C1: Tandoor	C2: Tangy tomato	C3: Green chilli
Colour	7	8.44	7.38
Flavour	7	9	8.44
Texture	6.88	8.66	8
Aroma	7	9	8.44
Overall acceptability	7	9	8.44



DISCUSSION

The data regarding weight of cashew kernels before and after coating is presented in Table 1. For conducting experiments, 40 g cashew kernels were taken and recorded as initial weight. Hence, results were nonsignificant. The data pertaining to the weight after coating was found to be significant. The maximum weight (49.95 g) was recorded by the C3 (Green chilli) may be due to the thick coating of green chilli. The minimum weight (48.20 g) was recorded by C1 (Tandoor).

The data regarding chemical composition of flavour coated cashew kernels is presented in Table 2. In case of moisture, the results were found to be significant. The maximum (2.64%) moisture percentage was recorded by C1 (Tandoor). The minimum (2%) moisture percentage was recorded by C3 (Green chilli), C2 (Tangy tomato). With respect to protein, the results were found to be significant. The highest (21.43%) protein content recorded by C2 (Tangy tomato) and it was at par with C1 (21.12), C3 (21). The fat content of flavour coated cashew kernels differs significantly with respect to different treatments of flavour coating. The highest (35.5%) fat content was recorded by C1 (Tandoor) and it was at par with treatments C2 (31.75%), C3 (34.4%). With respect to carbohydrate content, the results were found to be significant. The highest (28.9%) carbohydrate content was recorded by C2 (Tangy tomato) and it was at par with C1 (25.44%) and C3 (26.24%). In case of fiber content, the results were found to be significant. The maximum (1.38%) fiber content was recorded by C1 (Tandoor) and it was superior over other treatments. The ash content of flavour coated cashew kernels differs significantly with respect to different treatments of flavour coating. The highest (2.67%) ash content was recorded by C3 (Green chilli) and it was at par with C1 (2.50%), C2 (1.48%). With respect to protein, the results were found to be significant. The highest (2.70%) insoluble ash content recorded by C3 (Green chilli) and it was at par with C1 (2.52%), C2 (1.49%).

The data regarding the sensory evaluation of flavour coated cashew kernels is presented in Table 3. With respect to colour score of flavour coated cashew kernels, the results were found to be significant. The highest (8.44) colour score recorded by C2 (Tangy tomato) and it was at par with C1 (7). The highest colour score recorded by C2 (Tangy tomato) may be due to attractive colour provided by coating material. In case of flavour score of flavour coated cashew kernels, the results were found to be significant. The maximum (9) flavour score was recorded by C2 (Tangy tomato) and it was at par with C1 (7), C3 (8.44). The tangy tomato flavour is liked by most of the people. Hence, in present study maximum flavour score was recorded by tangy tomato coating. With respect to texture score of flavour coated cashew kernels, the results were found to be significant. The highest (8.66) texture score was recorded by C2 (Tangy tomato) and it was at par with C1 (6.88), C3 (8). The tomato coating provided crispy texture to the cashew kernels and hence maximum score for texture was obtained. The overall acceptability score of flavour coated cashew kernels differs significantly with respect to different treatments of flavour coating. The highest (9) overall acceptability score was recorded by C2 (Tangy tomato) and it was at par with C1 (7), C3 (8.44) and significantly superior over others. The highest overall acceptability score recorded by C2 may be the combined effect of colour, flavour, texture, aroma.

CONCLUSION

From experiment it can be concluded that treatment C2 (Tangy tomato) was found to be best followed by C3 (Green chilli), C1 (Tandoor) on the basis of sensory evaluation.

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