



## **Formulation and analytical study of frozen soya chunk Tikki**

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### **ABSTRACT -**

*The formulation and analytical study of frozen soya chunk Tikki were carried out. The main objective of frozen soya chunk Tikki is to provide a nutrient-rich snack for people of all age groups which can be eaten either by frying or also by roasting. The main ingredient in frozen soya chunk Tikki is soya chunks. Soya chunks are defatted soybean seed which is more protein-rich exceed than egg and meat, soya chunks are also rich in fiber. Potato gives a crispy and soft texture to tikkis. Flattened rice powder is act as a binding agent in soya chunks tikkis which contains antioxidants, and vitamins and are gluten-free. Cheese, ginger garlic paste, oregano, basil powder, green chili, onion powder, and black pepper powder are used for giving an Italian flavor to tikkis. Soya chunks have health benefits lowering the risk of coronary heart disease, aiding healthy weight management, reduce the risk of osteoporosis in menopausal women. This tikkis are best source of energy.*

**Keywords** -soya chunks, Tikki, frozen, energy, nutritional

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### **INTRODUCTION -**

Frozen soya chunk Tikki is a frozen product that includes RTC(ready-to-cook) products. It is a snack product that can be consumed for breakfast or as an evening snack or can eat as an accompaniment with lunch or dinner. Frozen foods retain their vitamin and minerals. There is also no change in the protein, carbohydrates, and fat content of the frozen product. Frozen soya chunk Tikki is a combination of soya chunks, potato, flattened rice powder, cheese onion powder, Ginger garlic paste, green chili paste, black pepper powder, oregano, basil, and salt. Soya chunks are the main ingredient used in frozen soya chunk Tikki. Soybean contains relatively low carbohydrate and high in protein. Also contain good dietary fibre, unsaturated fatty acids, bioactive compounds, vitamins and minerals. It's helps to fight diabetic and obesity, helps to strengthen bones and play an important role in blood clotting and pregnancy. It is an best alternative for meat for vegetarian diet [1,2,3,4].

Potato is another ingredient in the Tikki, Potatoes were a life-saving food source in the early times because of the vitamin C present in them and which is an antioxidant, vitamin C prevents scurvy. Another major nutrient is potassium. They are rich in energy, fiber, vitamins, and minerals[5,6,7].Flattened rice is the best binding agent in Tikki. It is a fast-moving consumer item. It is widely used as a breakfast item. It contains healthy carbohydrates, dietary fibre, antioxidant, fatty acid, amino acid [8,9].

Processed cheese is made with blend of natural cheese, emulsifier and other dairy or non-dairy products. Cheese is rich in protein, calcium and phosphorus which helps in building strong bones and muscles [10,11].Ginger and garlic provide a flavor to many dishes and make them Savory when it is used combined. Ginger and garlic may provide anti-bacterial, anti-cancer and anti-inflammatory properties [12,13,14].The green color of green chilli indicates the high amount of antioxidant. Green chilli has preventive and therapeutic properties for cancer, rheumatism, stiff joints, chest cold with cough, headache, heart arrhythmias Green chilli adds some spicy taste to Tikki[15].

Onion powder is a dehydrated and finely ground onion that is mostly used for flavor as a seasoning for chips or to add flavor to sauces. Also used with the mixing of other spices. Onion powder adds sweet and Savory flavor to dishes [16,17].Oregano has a unique flavor that is mostly used in Italian, Mexican, and American cuisines. It is used as a seasoning on pizza, and pasta. It contains anti-bacterial, anti-microbial and anti-inflammatory properties. Flavonoids and phenolic compounds are found in oregano [18,19,20].Basil has importance in Ayurveda. Basil has anti-inflammatory and antibacterial properties [21].

These all ingredients are used in Tikki and play various roles in adding flavor, taste, the texture to the final product i.e frozen soya chunk Tikki. It can be consumed either by roasting, shallow frying, or also by deep frying. Tikki is a fried patties product made of potato which is a widely accepted and putative snack product in India cherished by both children and adults. The concept of making Tikki a nutritional snack by using soya chunks as the main ingredient instead of potatoes can work towards enhancing the nutritional status of society [22].

#### **MATERIAL AND METHODS -**

For the production of frozen soya chunks, potato flattened rice powder, cheese, onion powder, black pepper powder, Ginger and garlic paste, green chilli paste, oregano, and basil powder were purchased from the local market of Satara.

#### **Procedure -**

1. Selection of raw material - select good quality soya chunks, potato ginger, garlic, and green chillies without any damage. Onion powder, black pepper powder, oregano, basil, and salt are all ingredients taken from the local market.
2. Take ground soya chunks - firstly added soya chunks in hot water for soaking for 5 minutes Then washed the chunks 2-3 times in cold water. Removed all the water from the chunks by pressing with my palm. and then ground it from a mixer grinder.
3. Take a smashed potato - boiled the potato till cooking and removed the peel of potato. And then smashed the potato
4. Making ginger garlic and green chilli paste - Take the same quantity of ginger, garlic, and green chillies and ground to make a fine paste.
5. Making a dough of Tikki - add ground soya chunks, mashed potato, ginger garlic, and green chili paste, add a small amount of onion powder, black pepper powder, salt, oregano, and basil and mix all the ingredients well.
6. Stuffing of cheese - take a grated cheese and mixed with some onion powder, black pepper powder, oregano, and basil to add flavor to the cheese.
7. Making a Tikki - then taking dough and making a small tikkis by stuffing a cheese and spices mixture in a desirable shape.
8. Packaging - packed all the tikkis in aluminum foil bags and sealed them properly to avoid contamination.
9. Storage - stored the tikkis in the freezer at 0 to -5°C.

#### **Analytical methods -**

##### **Determination of moisture content -**

Moisture content is, how much water is in a product. It influences the physical properties of a substance, including weight, density, viscosity, conductivity, etc. It is generally determined by weight loss After drying.

The moisture content of the product is determined by the hot air oven method.

$$\text{Moisture (\%)} = \frac{(W1 - W2)}{W1} \times 100$$

Where, W1 = weight (g) of the sample before drying

W2 = weight (g) of the sample after drying

##### **Determination of total Ash content:-**

Ashing is to burn off the organic matter and to determine the inorganic matter that remained. After the removal of water present in the product to char the sample thoroughly and keep for ashing at 550°C in a muffle furnace for 5 hrs.

The Muffle furnace method is used to determine the total Ash content of the food sample.

$$\text{Ash (\%)} = \frac{\text{weight of Ash}}{\text{weight of sample}} \times 100$$

##### **Determination of fat content:-**

The fat content of the sample soya chunk tikki is determined quantitatively using extraction using a lipophilic solvent. Fat content is generally determined by using the soxhlet apparatus method with using petroleum ether.

$$\text{Fat (\%)} = \frac{\text{Weight of fat}}{\text{Weight of sample}} \times 100$$

### Determination of protein content -

Texture vegetable protein, also known as textured soy protein. soya chunks is a defatted soyabean seeds flour product, a by-product of extraction of soybean oil. Soya chunks contain a protein exceeding than meat and egg protein. The Kjeldahl method is basically used to determine the protein content in the food sample.

$$\text{Protein (\%)} = \frac{(A-B) \times N \times 1.4007 \times 6.2}{W}$$

Where A = volume (ml) of 0.2N HCL used sample titration

B = Volume (ml) of 0.2 N HCL used for blank titration for calculation

N = Normality of HCL

W = The weight of the sample

14.007 = an atomic weight of nitrogen

6.25 = A protein-nitrogen conversion factor

### RESULT AND DISCUSSION

Soya chunks being low in fat with no cholesterol, having proteins of high biological value, and being rich in dietary fiber, minerals, vitamins, and other bioactive agents are considered healthy food. There are all nutritious products are used in these tickets like soya chunks, potato, flattened rice and cheese. These tikkis are made by mixing uniformly all ingredients with stuffed cheese, and Italian seasonings like oregano and basil which gives an authentic flavor to the Tikki. Green added spicyness. The main benefit of these tikkis that this tikkis are also can consume by roasting. Because of roasting fat level of Tikki decreases than deep fried tikkis and it can be eaten by any person or any age group people. Most people like the flavor of ginger garlic and oregano and basil which are found in the tikkis.

#### 1. Proximate Analysis -

The color of parfried frozen Tikki was analyzed by good technologist teachers and students and evaluated on the hedonic scale. The crispiness of fried Tikki was also analyzed on a hedonic scale from 1 to 9 from dislike extremely to like extremely. The taste of full-fried frozen soya chunk Tikki scored a hedonic rating. The scores ranged from 7 to 8. The proximate analysis of the acceptable sample was carried out.

Table 1. Proximate analysis of an acceptable sample of frozen soya chunk

Sr. No	Nutrients	Value per 100g
1	Energy	119.84kcal
2	Carbohydrate	2.66g
3	Fat	4.8 g
4	Protein	16.50 g
5	Ash	9.05%
6	Moisture	66.99%

#### Sensory analysis -

Frozen soya chunk Tikki is prepared with different combinations of Indian spices like coriander powder, cumin powder, chat masala, onion powder with cheese mixed in dough and also by stuffing in it i.e the sample SCT1 and in this SCT1 is the sample in which cheese is mixed in dough and SCT2 cheese in stuff at the middle of the Tikki. In other samples, Italian flavors are used like oregano, basil, onion powder, and black pepper powder with mixing cheese directly in the dough and also by stuffing i.e samples SCT3 and SCT4. In SCT3 cheese is mixed in dough and SCT4 is a sample in which cheese is stuffed. These 4 samples SCT1, SCT2, SCT3 SCT4 are analyzed by sensory analysis. The hedonic rating is used to measure the acceptability of the 9-point hedonic rating to scale food samples. The particularly faculty members and Students are asked to rate tikkis.

Based on the sensory evaluation sample, SCT4 is selected, as compared to SCT1, SCT2, SCT3

Table 2. Sensory evaluation based on a hedonic scale

Parameters	SCT1	SCT2	SCT3	SCT4
Taste	7.1	7.6	7.2	8.3
Mouthfeel	6.8	7.4	7.2	8.3
Odor	6.9	7.2	7.3	8.5
Colour	7	7.4	7.3	8.1
Texture	7.4	7.6	7.1	8.4
Overall acceptability	7.0	7.4	7.2	8.3

## CONCLUSION

The frozen soya chunk Tikki is prepared with acceptable physicochemical and sensory characteristics. SCT4 is the more acceptable sample which has an Italian flavor and is stuffed with cheese. It is a rich source of food energy and protein. It is a snack food that is ready to cook and cooked in 3-5 minutes. It is a nutritional-rich snack product for all age group people. These ingredients are easily Available at low prices at the local market of Satara. The final composition of Tikkis 119.84kcal/100g.

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