

Development and Standardization of Chips and Noodles from *Chicoreus Ramosus* Muscle

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Abstract

Chicoreus ramosus muscle is edible seafood that is found in Thoothukudi district. So I changed that muscle to value-added products. It has a significant role in brain development. Foods made from *Chicoreus ramosus* muscle boost health. The objectives: To analyse the toxicity, biochemical, amino acid, and microbial content and shelf life of the *Chicoreus ramosus* whelk muscle, to prepare the *Chicoreus ramosus* whelk muscle powder and standardize *Chicoreus ramosus* whelk muscle products, chips, and noodles, clean the whelk muscle, boil it for 1 hour, and keep it in a hot air oven for 46 hours. Toxicity and heavy metals are analysed, and after that, the products are prepared for different formulations, organoleptic evaluation, nutrient, physical character, toxicity, heavy metals, microbial, shelf life, packaging, cost, and the quality of the products. Chips and noodles Moisture 2%, 4%, 10.28, 45.2 gm of carbohydrates, 19.5 g, 21.2 gm of protein, and 1.41.1.48 g of lipids, contains micronutrients about 96, 102.2 mg of calcium, 3.7, 4.5 mg of iron, 0.3, 0.2 mg of copper, 1.3, 1.5 mg of zinc, and 0.8, 0.7mg of selenium, contains multivitamins about 0.42, 0.11 mg of Vitamin E, 0.042.1.2 mg of Vitamin B1, 9,7 mg of Vitamin B9, 15.42.14.1 mg of Vitamin B12, and 5.8 7.0 mg of Vitamin C (Ascorbic Acid), contains amino acids about 1.01, 1.01, 1.02 mg of Tryptophan, 1.98, 0.2 mg of Threonine, 5.33, 5.36 mg of Leucine, 4.07, 3.02 mg of Isoleucine, and 2.16, 2.16, 2.19 mg of Valine During 180 days were observed chips days and noodles 120 days no change.

Keywords: *Chicoreus ramosus*; Vitamins; Chips; Noodles; Muscle; Analysis; Nutrient

Introduction

Chicoreus ramosus, common name the ramose murex or branched murex, is a species of predatory sea snail, a marine gastropod mollusk in the family Muricidae, the murex snails. It is considered an economically important species in India. Especially this species large amount in south India. *Chicoreus ramosus* prevent vibrio cholerae [1]. It is highly nutritious. This muscle seashore people used only boiling and dried format but no products in the muscle so I changed developed products. Mintel research reveals that two in five (41%) Indians aged 18-34 associate instant noodles and side dishes with time saving, while over a quarter (28%) agree that they would like packaged breakfast options that have a short preparation/wait time.

Objectives

To prepare the *Chicoreus ramosus* whelk muscle powder, and standardize *Chicoreus ramosus* whelk muscle products, chips and noodles,

To analyses the toxicity, biochemical, amino acids and microbial content and shelf life, packaging and cost analysis of the *Chicoreus ramosus* whelk muscle chips and noodles.

Materials and Methods

Selection of the sample

Chicoreus ramosus the whelk was collected from the seashores of Vellappatty, Tharuvaikulam, Theruspuram, and Kalavasal in Thoothukudi District. Mint and coriander leaves were collected from the Thoothukudi vegetable market. Pepper, onion powder, sugar, salt, and oil were purchased from Velavan Super Market in Thoothukudi [2].

Preparation of *Chicoreus ramosus* muscle powder

The muscles were separated from the shell of the whelk. Then the

whelk muscles were boiled in salt water for an hour. Treached 850 the boiled 1kg *Chicoreus ramosus* Whelk muscles were cleaned by removing afterthoughts after muscle weight was 850 gm [3]. The cleaned whelk muscles were cut into small pieces in a round shape and oven-roasted at 120°C for 5 hours for further preparation and analysis.

Preparation of flavour powder

Mint and coriander leaves were sun-dried for 7 days before being baked for 2 minutes at 62 degrees Celsius. Then grained separately. Pepper grinded in mixer. After that, sieve all the powder separately.

Formulation and standardization of *Chicoreus ramosus* muscle chips and noodles

S1, S2, Samples were prepared in different flavours and heated to 162°C. Carefully handle the chips into the refined oil and use a slotted metal utensil to deep fry for 2 minutes [4]. Within a second, sprinkle the flavour powder for flavour and taste (Table 1).

Formulation and standardizations of *Chicoreus ramosus* muscle Noodles

First add *Chicoreus ramosus* powder to maida flour and salt. Then we added water and mixed for 20 minutes to make the perfect dough.

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Table 1: Formulation of *Chicoreus ramosus* muscle chips.

| S.NO | Samples | FLAVOURS | | | | | |
|------|---------|------------------|-----------------|-----------|--------------|-------|------|
| 1 | S1 | Pepper Powder | Mint | Coriander | Onion powder | Sugar | Salt |
| 2 | S2 | Redchilli Powder | Turmeric Powder | Coriander | Onion powder | Sugar | Salt |

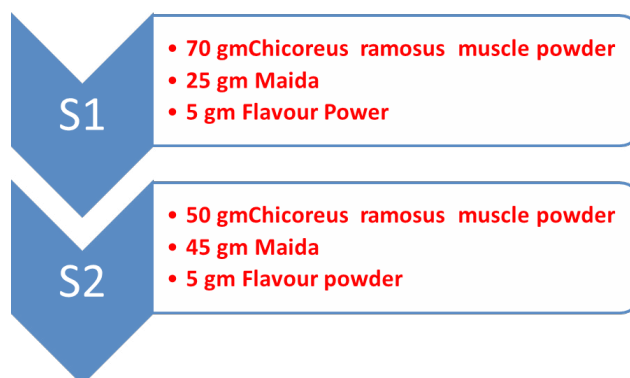


Table 2: Formulation of *Chicoreus ramosus* muscle noodles.

Then a noodle machine was used to mould the dough into the boiled water and let it cool in the 60°C water. Then, after 72 hours kept at 40°C to 50°C in the sun to dry the noodles, we packed the noodles with laminated pouches. We use 75 gm, 50 gm, of *Chicoreus ramosus* powder in 25 g, 50 gm, and 70 gm of maida flour and salt in two different formulations (Table 2).

Organoleptic acceptability of whelk muscles products

Organoleptic testing involves the assessment of flavour; odour, appearance, texture and mouth feel of a food product. The organoleptic testing of food products is essential in ensuring comply with organizational and customer requirements.

Sensory evaluation of whelk muscle product

Sensory evaluation has been defined by the Institute of Technologists (IFT) as a scientific discipline used to evoke measure, analyse, and interpret human reactions to meat. Sensory characteristics are perceived by sight, smell, taste, and hearing. Planned the sensory evaluation process in a direct way [5]. Using the 7-point hedonic scale performed the sensory evaluation for the project. Prepared products gave the 100 panel members analyzed the best one selected after that selected samples further nutrients, microbial and heavy metals analyzed.

Analysis of selected nutrient content of formulated products

Prepared products the nutrients namely Chips and noodles Moisture carbohydrates, protein lipids, Vitamin E, Vitamin C (Ascorbic Acid), Vitamin B1, Vitamin B9, Vitamin B12 calcium, iron, copper, zinc and selenium, magnesium, potassium, sodium, Amino Acids ,Tryptophan, Threonine, Leucine, Isoleucine Valine were analyzed for the Carbohydrates, protein, Fat, Iron, vitamin c, vitamin E, magnesium, calcium, potassium, sodium, amino acid, moisture were analyzed for the prepared products using FSSAI/AOAC standardized procedure

Microbial analysis of formulated products

The microbial and anti-microbiological tests, such as E. coli, Aspergillus Niger, Bascillus, antibacterial, and anti-fungal tests, were carried out for prepared chips and noodles products [6].

Heavy metals toxicity and pH analysis of the product

Alfa toxin and the heavy metals namely Lead, Mercury, Cadmium, Arsenic and Nickel, Alfa toxin and PH analysis followed this study for food safe consumption were analyzed for the prepared products using FSSAI/AOAC standardized procedure [6].

Packaging of product

Packaging in plastic sachets, laminated pouches, and aluminium foil keeps the chips and noodles in a hygienic state, preserves the aroma of the food for more days, and prevents the entry of microbes [7].

Shelf life of product

The shelf life of *Chicoreus ramosus* muscle products was 180 days for chips and 120 days for noodles.

Analysis of data

Various static tools were used to analyse and interpret the data, but we used two main analyses: percentage analysis and mean.

Result and Discussion

Sensory evaluations of the chips and noodles (Table 3)

Chicoreus ramosus Chips overall acceptability of chips samples. The overall acceptability of control chips's like extremely value (0.90) is higher than the chips sample. The remaining choose the option of control chips like very much (0.02), like moderately (0.02), like slightly (0.01), neither like or dislike (0.01), dislike highly (0.01), dislike moderately (0.01), dislike very much (0.01) and dislike extremely (0.01). The sauce sample (S1) has the highest score of 0.82 (like extremely) by the members in comparison with chips sample (S2) 0.78 (like extremely).The remaining choose the option of S1 like very much (0.04), like moderately (0.02), like slightly (0.02), neither like or dislike (0.02), dislike highly (0.02), dislike moderately (0.02), dislike very much (0.02) and dislike extremely (0.02). The remaining choose the option of S2 like very much (0.06), like moderately (0.02), like slightly (0.04), neither like or dislike (0.02), dislike highly (0.02), dislike moderately (0.02), dislike very much (0.02) and dislike extremely (0.02) [8] (Table 4).

The *Chicoreus ramosus* noodles overall acceptability score of like extremely control (0.82) is higher than S2 (0.81) and S3 (0.66). The remaining choose the option of S1 liked very much (0.04), liked

Table 3: Overall acceptability of the chips.

| Parameters | Control (S1) | | Chips sample (S2) | | Chips sample (S3) | |
|-------------------------|--------------|------------|-------------------|------------|-------------------|------------|
| | Respondents | Mean value | Respondents | Mean value | Respondents | Mean value |
| Like extremely | 90 | 0.90 | 82 | 0.82 | 78 | 0.78 |
| Like Very much | 2 | 0.02 | 4 | 0.04 | 6 | 0.06 |
| Like moderately | 2 | 0.02 | 2 | 0.02 | 2 | 0.02 |
| Like slightly | 1 | 0.01 | 2 | 0.02 | 4 | 0.04 |
| Neither like or dislike | 1 | 0.01 | 2 | 0.02 | 2 | 0.02 |
| Dislike highly | 1 | 0.01 | 2 | 0.02 | 2 | 0.02 |
| Dislike moderately | 1 | 0.01 | 2 | 0.02 | 2 | 0.02 |
| Dislike very much | 1 | 0.01 | 2 | 0.02 | 2 | 0.02 |
| Dislike extremely | 1 | 0.01 | 2 | 0.02 | 2 | 0.02 |

Table 4: Overall acceptability of the noodles.

| Parameters | Control (S1) | | Noodles sample (S2) | | Noodles sample (S3) | |
|-------------------------|--------------|------------|---------------------|------------|---------------------|------------|
| | Percentage | Mean value | Percentage | Mean value | Percentage | Mean value |
| Like extremely | 88 | 0.88 | 81 | 0.81 | 78 | 0.78 |
| Like Very much | 4 | 0.04 | 5 | 0.05 | 9 | 0.09 |
| Like moderately | 2 | 0.02 | 2 | 0.02 | 3 | 0.03 |
| Like slightly | 1 | 0.01 | 2 | 0.02 | 2 | 0.02 |
| Neither like or dislike | 1 | 0.01 | 2 | 0.02 | 2 | 0.02 |
| Dislike highly | 1 | 0.01 | 2 | 0.02 | 2 | 0.02 |
| Dislike moderately | 1 | 0.01 | 2 | 0.02 | 2 | 0.02 |
| Dislike very much | 1 | 0.01 | 2 | 0.02 | 2 | 0.02 |
| Dislike extremely | 1 | 0.01 | 2 | 0.02 | 2 | 0.02 |

Table 5: Thickness of the Chicoreus ramosus muscle chips (describes the thickness of the product. The whelk muscle chips in one piece have 10 mm of thickness).

| Samples | Thickness |
|---------------------------------|-----------|
| Whelk Muscle chips One piece | 10 mm |

moderately (0.02), liked slightly (0.02), neither like or dislike (0.02), dislike highly (0.02), dislike moderately (0.02), dislike very much (0.02), dislike extremely (0.02). The remaining choose the option of S2 liked very much (0.05), liked moderately (0.03), liked slightly (0.02), neither like or dislike (0.02), dislike highly (0.02), dislike moderately (0.02), dislike very much (0.02), dislike extremely (0.02). The remaining choose the option of S3 liked very much (0.10), liked moderately (0.11), liked slightly (0.03), neither like or dislike (0.02), dislike highly (0.02), dislike moderately (0.02), dislike very much (0.02), dislike extremely (0.02).

Physical characteristics of the Chicoreus ramosus muscle chips

Thickness of a food product is defined as a bulky characteristic of a product as sensed in mouth or by feeling and seeing. The thickness of the Samples is given (Table 5) [9,10] (Figure 1& 2).

Nutrient analysis of the products

(Table 6)

Amino acids content of the Chicoreus ramosus chips and noodles

(Table 7) Chips and noodles Moisture 2%,4% ,10.28 ,45.2 grams of carbohydrates, 19.5 g,21.2 of protein and 1.41.1.48 g of lipids, contains micronutrients about 96,102.2 mg of calcium, 3.7,4.5 mg of iron, 0.3,0.2 mg of copper, 1.3,1.5 mg of zinc and 0.8 ,0.7mg of selenium, contain Multivitamins about 0.42, 0.11 mg of Vitamin E, 0.042.1.2 mg of Vitamin B1, 9.7 mg of Vitamin B9, 15.42.14.1 mg of Vitamin B12

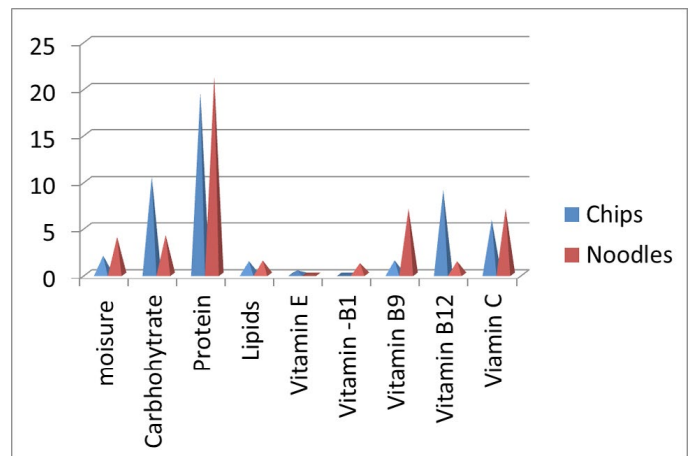


Figure 1: Macro and micro Nutrient content of the Chicoreus ramosus chips and noodles.

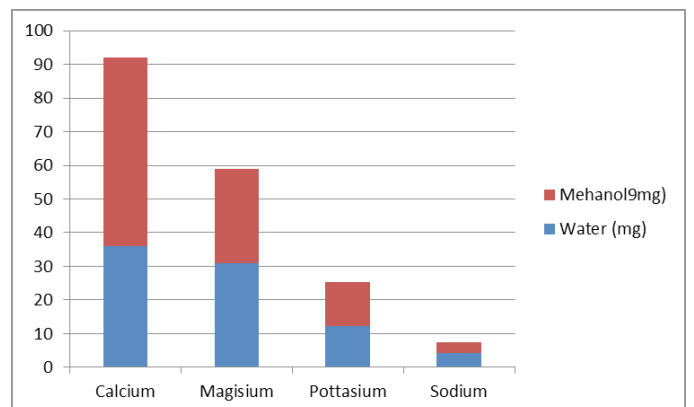


Figure 2: Minerals analysis of the products.

Table 6: Macro and micro nutrient content of the *Chicoreus ramosus* chips and noodles.

| Parameters | Chicoreus ramosus Chips | Chicoreus ramosus Noodles |
|-------------------|-------------------------|---------------------------|
| Moisture | 2% | 4% |
| Carbohydrates(gm) | 10.28 | 45.2 |
| Protein (gm) | 19.5 | 21.2 |
| Lipids(gm) | 1.41 | 1.48 |
| Vitamin E(mg) | 0.42 | 0.11 |
| Vitamin B1(mg) | 0.042 | 1.2 |
| Vitamin B9(mg) | 9 | 7 |
| Vitamin B12(mg) | 1.5 | 1.4 |
| Vitamin C(mg) | 5.8 | 7.0 |

Table 7: Minerals analysis of the products.

| S. No | Nutrients | Water | Methanol |
|-------|-----------|---------|----------|
| 1. | Calcium | 24 mg | 50 mg |
| 2. | Magnesium | 14.4 mg | 62.4 mg |
| 3. | Potassium | 13 mg | 14 mg |
| 4. | Sodium | 1 mg | 1.4 mg |

| Parameters | Chicoreus ramosus Chips | Chicoreus ramosus Noodles |
|-----------------|-------------------------|---------------------------|
| Tryptophan (mg) | 1.01 | 1.02 |
| Threonine (mg) | 1.98 | 0.2 |
| Leucine (mg) | 5.33 | 5.36 |
| Isoleucine (mg) | 4.07 | 3.02 |
| Valine (mg) | 2.16 | 2.19 |

Table 8: Heavy metals level in the *Chicoreus ramosus* raw muscle (30 grams).

| S. No | Heavy metals | Toxicity | Test Method |
|-------|--------------|-------------|--------------|
| 1. | Mercury (Hg) | 0.014 mg/kg | FSSAI & AOAC |
| 2. | Lead (Pb) | 0.21 mg/kg | FSSAI & AOAC |
| 3. | Cadmium (Cd) | 0.01 mg/kg | FSSAI & AOAC |
| 4. | Arsenic (As) | <0.01 mg/kg | FSSAI & AOAC |
| 5. | Nickel (Ni) | 0.018 mg/kg | FSSAI & AOAC |

and 5.8 ,7.0 mg of Vitamin C (Ascorbic Acid),contain Amino Acids about 1.01,1.02 mg of Tryptophan, 1.98 ,0.2 mg of Threonine, 5.33, 5.36 mg of Leucine, 4.07,3.02 mg of Isoleucine and 2.16,2.19 mg of Valine has analysed the prepared products using a standardised procedure (Table 8)

From the above (table 8), the heavy metals is lightly present but no harmful same level present in chips and noodles. It has found no toxicity in the chips and noodles. It can be concluded that the whale muscle is safe for humans to consume. These heavy metals are permitted in food.

Microbial analysis of the *Chicoreus ramosus* chips and noodles

E. coli, *Bacillus*, and *Aspergillus Niger* have not been seen in the whale muscle products. The absence of bacteria in the sample increases the shelf life of the sample. The prepared *Chicoreus ramosus* muscle noodles and chips products have been stored in a container at room

temperature for a period of 30 days, and the microbial analysis was done during the initial 15 days, 120 days, and 30 days of storage. It enables the preservation of quality and increases the shelf life of whale muscle products. Chips do not spoil after 180 days.

Packaging of the products

Packaging in laminated pouches and an airtight container keeps the noodles and chips in a hygienic state, preserves the aroma of the food for more days, and prevents the entry of microbes.

Cost analysis of the products

The *Chicoreus ramosus* muscle chips 100 grams has Rs. 50, the *Chicoreus ramosus* muscle noodles grams has Rs. 30.

Summary and Conclusion

- Finally, conclude the summary by saying that the 16–19-year-old adolescents preferred the *Chicoreus ramosus* muscle chips sample extremely (0.86), and the 12- to 15-year-old adolescents preferred the *Chicoreus ramosus* muscle noodles sample.
- The nutritive values have increased in ready-to-eat products compared to raw muscles. The samples were packed in airtight containers to retain freshness, palatability, and acceptability. Overall acceptability of chips and noodles scored the highest score.
- Become an entrepreneur by importing and exporting *Chicoreus ramosus*.
- The seashore people can get an income by selling *Chicoreus ramosus* muscle and their products.
- People who have gained more knowledge about the *Chicoreus ramosus* muscle can use the food for many purposes.

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