

Production and analysis of legumes based chunks

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Abstract

Legumes and pulses are rich sources of protein. Chunks are good source of protein for vegan diet. Chunks can be prepared with soyabean, legumes and vegetables. The objective of present study was to prepare and analyse preserved chunks. The study established the pH 7.40 this pH was maintained by proper dehydration. Moisture content of the green gram chunks 10% and soya chunks 15%. Moisture content of gram flour chunk is 10%. Therefore, this is the reason of the variation in moisture present in the chunks. Water absorption capacity of domestic chunk is 8gm in total 100 gram chunks. Protein content of gram flour chunk is 5.13% and that of soya chunk is 5.3%. Chunks are dried product of green gram, gram flour and soya bean which can be prepared by soaking, drying and mixing of pulses and spices. This chunk is good option for protein source and can be alternate for food processing industry.

Key words: soya bean, chunks, water absorption capacity, moisture level, Protein test

1. Introduction

Chunks are obtained from pulses, soya beans, fruits and vegetable at the time of extraction and drying. Chunks are also known as meal makers. (Bhatnagar et al 2004) These chunks are made from pulses flour via the extrusion process. The extrusion process changes the structure of the initial product at the molecular level and a meaty characteristic is derived in the chunks. (Bisaliah S 1998)

Apart from large amount of protein content, chunks are also high in carbohydrates. A hundred gram serving of chunks contains 52 grams of protein and 33 grams of carbohydrate. It also contains iron and calcium along with little fat. A 100 gram of chunks has approximately about 336 calories. They are rich in Omega-3 fatty acid and vitamin D. (Bhatia et al 2008) Chunks are heart-healthy food because they are low in calories. Store in an air tight box and in a cool dry place in its dehydrated form the legumes chunk has a shelf life of longer than a year. (B Srilakshmi 2015)

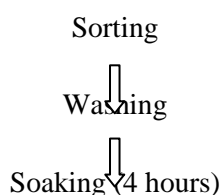
Material and method

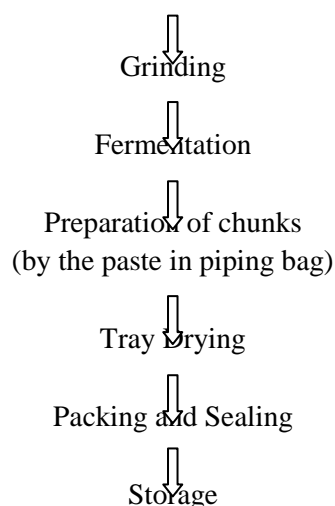
The present study has been planned to formulate the gram flour and green gram chunks. The experiments were carried out in the Advanced Food Technology laboratory, Department of Food Technology, school of Applied and Life Sciences, Uttarakhand University, Dehradun.

Material and Equipment:

1. Black gram, 2. Green gram, 3. Salt, 4. Asafetida muslin cloth

Flow chart of chunks prepared by soaking and mixing





Analytical Procedure

pH test : It is performed by AOAC 2007 method .A pH meter is used to determine the whether the product is acid or alkaline in nature. pH is the concentration of hydrogen ions in the solution or a product. A solution or a product which contains more H⁺ ions is said to be acidic whereas the solution containing more OH⁻ ions is alkaline in nature. Range of pH is from 1 to 14, where 7 is the neutral value. The pH value of sample was measured directly by digital pH meter.

Moisture content :

Moisture content was determined by the standard method of rangna, 1986. The moisture content is defined as the amount of water present in domestic soya chunks for determining the moisture content in the sample, dry empty Petridis weigh and then 2gm sample is added to it and it is kept in Hot air oven at 1100 c for 2-3 Hours. After the given time the Petridis are kept in the desiccators to cool down and the weight is taken using weighing machine. Calculation is done by the formula.

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Water- absorption capacity

The Water absorption Capacity was determined according to the method of Giamiet.al., (1992).Water Hydration or Water Absorption Capacity (WAC) is the amount of water taken up by flour to achieve the desired consistency and create a quality end product. One gram of sample was mixed with 10 ml of distilled water and allowed to stand at ambient temperature ($30 \pm 2^{\circ}\text{C}$) for 30 min. It was then centrifuged for 10 minute at 5000 rpm. The supernatant was discarded. The weight of water absorbed by 1 g of flour was calculated and expressed as water absorption capacity.

Protein content

Protein content in the samples was determined using Bradford method. The standard curve was plotted between A₅₉₅ nm on Y-axis and concentration in μg on X- axis. From the standard curve, the concentration of protein was calculated.

Results and discussion

pH

pH of the Gram flour chunks is 7.40 and that of soya chunks is 6.8

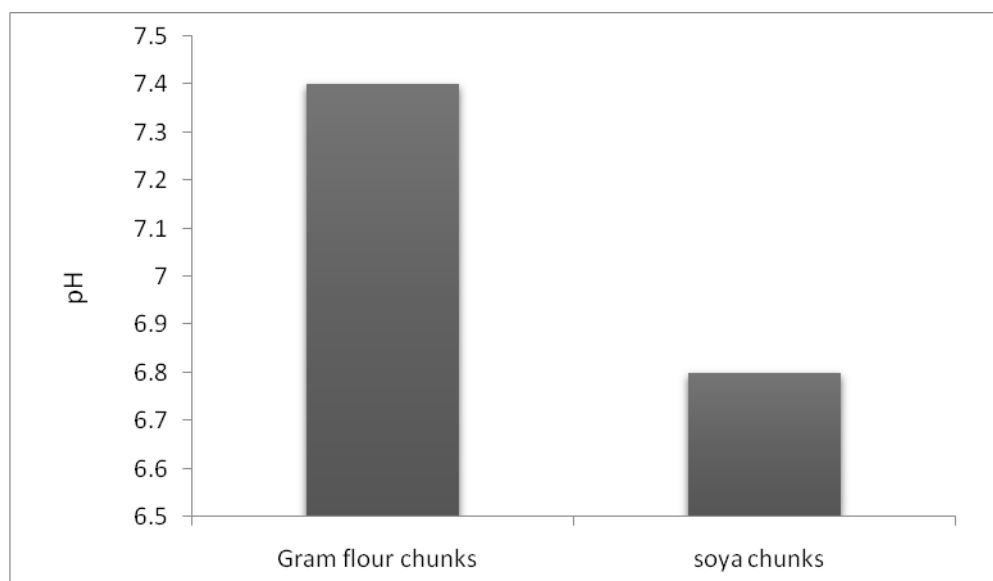


Fig 1 graphical representation of pH of gram flour chunks and soya chunks
Moisture content

It can be considered as one of the important analyses that are performed on a food product. With a proper understanding of techniques, appropriate moisture could be analyzed. The method used for determining moisture may measure more or less of the moisture present depending on the form of the water present in a food. Therefore, this is the reason of the variation in moisture present in the chunks which was Moisture content of the green gram chunks 10% and soya chunks 15% Moisture content of gram flour chunk is 10% and that of soya chunks is 15%.

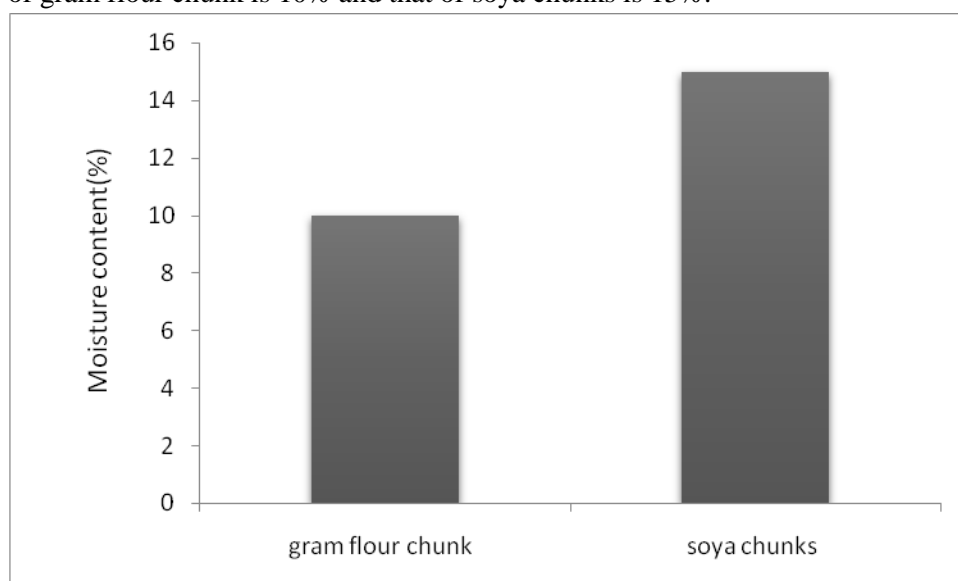


Fig 2 graphical representation of Moisture content (%) of gram flour chunks and soya chunks
Water absorption capacity

Water absorption capacity of domestic chunk is 8gm in total 100 gram chunks .A high amount of green gram and black gram pulses for preparation of chunks.

Protein content

Protein content of gram flour chunk is 5.13% and that of soya chunk is 5.3%.

Conclusion

Extrusion cooking process is widely used process in the cereals, snacks and pet food industries that use starch and protein as raw materials to produce highly valuable food. Chunks are dried product of green gram, gram flour and soya bean which can prepared by soaking, drying and mixing of pulses

and spices (Abdul Baki 1973). Chunks are the product formed by breaching or battering the material. They are a significant and cheap source of protein for human feeds (Billore SD et al 2004). Chunk is a food made by fermenting grounded, crushed or chopped cereals, millets and legumes. It has various health benefits. Nowadays, it is consumed worldwide as a major cereal meal as it is a high source of energy, and a good source of protein. Generally, chunks are prepared from Gram flour. Present study shows that the moisture value 10%, pH of the Gram flour chunks is 7.40 this type of chunk is good option for protein source and can be alternate for food processing industry.

Conflict of interest:

Authors declare that they have no conflict of interest.

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