Journal of Pharmacognosy and Phytochemistry
Available online at www.phytojournal.com

E-ISSN: 2278-4136
P-ISSN: 2349-8234
www.phytojournal.com
JPP 2021; 10(2): 467-469
Received: 23-12-2020
Accepted: 11-02-2021

D Gayatri
Assistant Professor,
Department of Food Technology,
Rajiv Gandhi Degree College,
Rajahmundry, Andhra Pradesh,
India

P Mounika
Assistant Professor,
Department of Food Science and Technology, Ideal College of Arts and Sciences, Kakinada, Andhra Pradesh, India

AJ Theressa
Assistant Professor,
Department of Food Science and Technology, Ideal College of Arts and Sciences, Kakinada, Andhra Pradesh, India

GD Ravali
Assistant Professor,
Department of Food Technology,
Rajiv Gandhi Degree College,
Rajahmundry, Andhra Pradesh,
India

Corresponding Author:
GD Ravali
Assistant Professor,
Department of Food Technology,
Rajiv Gandhi Degree College,
Rajahmundry, Andhra Pradesh,
India

Development of functional foods and their Physico-chemical properties

D Gayatri, P Mounika, AJ Theressa and GD Ravali

Abstract
This study was designed to prepare functional foods using sorghum flour, wheat flour, defatted soy flour, and functional ingredients such as Ocimum leaf powder and *Aloe vera* juice. Three experimental products, namely T1, T2, and T3, were prepared and subjected for sensory evaluation, and the best product, T2, was selected. T2 product was good in terms of color, taste, flavor, texture, and overall acceptability compared to T1 and T2. The moisture content of the T2 was 4 %, and fat was about 5%, the protein content was about 12%, and the Carbohydrate was about 68%.

Keywords: Functional foods, wheat flour, *Aloe vera* juice

Introduction
Certain varieties of sorghum bran may affect critical biological processes that are important in diabetes and insulin resistance (Farrar *et al*., 2008) [4]. Grain sorghum contains beneficial components that could be used as food ingredients or dietary supplements to manage cholesterol levels in humans (Carr *et al*., 2005) [3].
Legumes such as soybeans contain complex carbohydrates, minerals, phytoestrogens, vegetable protein, soluble fiber, oligosaccharides, particularly the isoflavones genistein and daidzein that may be beneficial in the management of diabetes.
Legumes such as soybeans have played an important role in traditional Asian diets. Soybeans are excellent sources of protein, dietary fiber, and phytochemicals. The high content of isoflavones in soybeans and soy products have been associated with bone health, lower blood cholesterol, and reduced risk of various cancers. The use of soy protein resulted in a significant decrease in blood sugar levels.
Ocimum Sanctum (holy basil), called Tulsi in India, is ubiquitous in Hindu tradition. Ocimum is explored as a medicinal plant, and it occupies an enviable position in the holistic system of Indian medicine, 'Ayurveda,' which has its root in antiquity and has been practiced for centuries. Ocimum is an erect, herbaceous, much-branched, softly hairy, annual with purple or crimson flowers. Leaves of Ocimum Sanctum were found to be rich in Vitamin C, Vitamin E, and phytochemicals, possessing antioxidant properties beneficial to health and the juice of the leaves is given to the children for cold and bronchitis, and the leaves are also used for sauces, soups, and salads.

Materials and Methods
Location of the Study
The entire study was planned and conducted in the Rajiv Gandhi Degree College, Department of Food Technology, Rajahmundry.

Procurement and Pre-Processing of Raw-Material
For the present investigation, Soybean flour and Sorghum flour were procured from a local supermarket in Rajahmundry as a single lot. Tulasi (*Ocimum Sanctum)* leaves were procured from the Herbal Garden, Rajahmundry. The *Ocimum-Sanctum* leaves were washed under running water to remove any adhering particles of dirt. The leaves were then dried in a hot air oven at low temperatures (50-60 °C), powdered, sieved, and stored in airtight containers in a refrigerator till standardization of products and analysis for various parameters was carried out at a later date. *Aloe vera* leaves were collected from an herbal garden and subjected for grading and washing, trimming, and cutting into small pieces to remove skin, peels. The juice was extracted and used in further processing.
The chemicals used in the research were of analytical food grade and purchased from HiMedia Laboratories Pvt. Ltd. (Delhi).

Organoleptic evaluation
Prepared products were subjected for organoleptic analysis by using a hedonic scale, and the best product was selected (Amerine *et al*., 1965) [1].

Physico-chemical analysis
AOAC standard methods were followed for the Physico-chemical analysis of the prepared functional extruded product.

Product Development and Testing Acceptability
Two products, namely a baked and an extruded product, were standardized, incorporating *Ocimum Sanctum* leaf powder at various levels.

Results and Discussion
Product development
Three products, namely T_1, T_2, and T_3, were prepared by adding functional ingredients such as *Aloe vera* juice and ocemum leaf powder.

Table 1: Development of functional food products with different combinations

S. No	Ingredients (%)	T_1	T_2	T_3
01	Sorghum flour	40	30	20
02	Wheat flour	10	20	30
03	Defatted soya flour	30	20	10
04	*Aloe vera* juice	10	15	20
05	Ocimum leaf powder	10	15	20

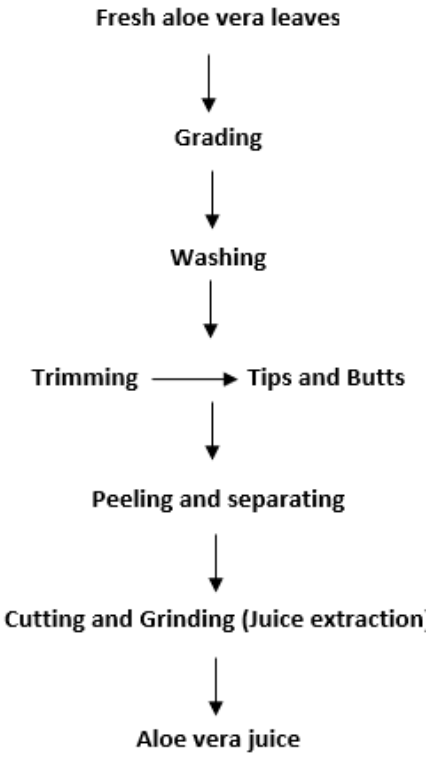

Fig 1: Preparation of *Aloe vera* juice:

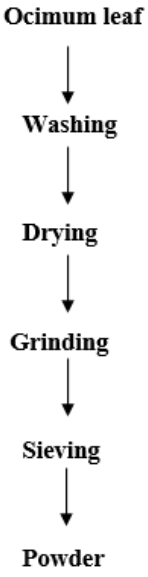

Fig 2: Preparation of Ocimum leaf powder:

Organoleptic evaluation

Table 2: Prepared products were subjected for organoleptic evaluation and presented

Sensory Parameter	T1	T2	T3
Colour	7.2 ± 0.60	8.4±0.40	8.0±0.40
Flavor	8.0±0.40	8.6±0.80	7.6±0.40
Texture	7.8±0.60	8.4±0.60	7.5±0.50
Taste	6.8±0.50	8.2±0.40	6.5±0.50
Overall acceptability	7.4±0.50	8.5±0.50	7.0 ± 0.50

Product T2 got the highest score (8.4±0.4) in terms of color compared to T1 (7.2 ± 0.60) and T2 (8.0±0.4). Product T2 got the highest score for flavor (8.6±0.80), Texture (8.4±0.60), taste (8.2±0.40), and overall acceptability **(**8.5±0.50) compared to T1 and T3.
Extruded product T2 was subjected for further analysis.

Table 3: Physico-chemical analysis

Parameters (%)	T2
Moisture	4
Fat	5
Protein	12
Ca	68

The table indicates the Physico-chemical properties of the T2 product. The moisture content of the T2 product was about 4%, fat, 5%; protein, 12%, and carbohydrates, 68%.

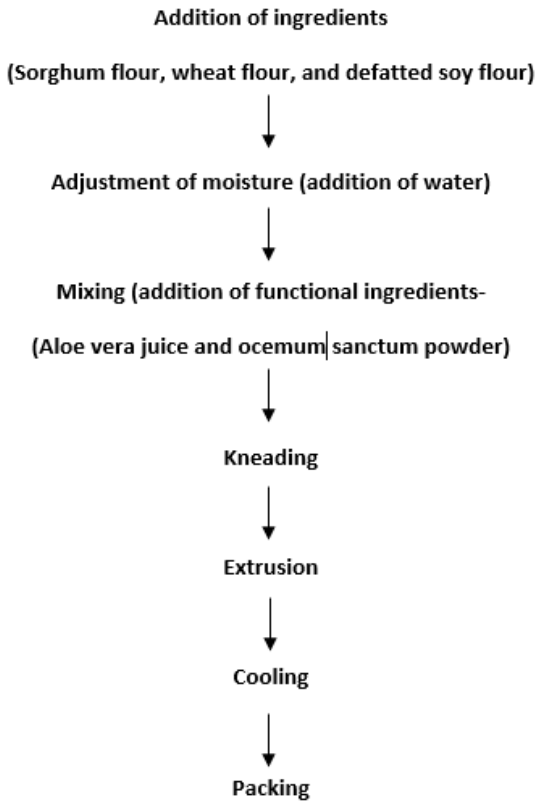

Fig 3: Development of a functional Extruded product

Sorghum flour, wheat flour, and *Aloe vera* juice, and ocemum leaf powder were mixed properly and adjusted the moisture about t0 30% during the mixing operation before the extrusion process. A single screw extruder was used with different shapes of die to produce the functional extruded product. Extruder products are one of the popular fast-food products having excellent market demand in the country as well as in abroad. The product can be prepared by using extrusion technology. Food extrusion is a moist heat cooking used in food processing. It is a process by which a set of mixed ingredients are forced through an opening in a perforated plate or die with a design specific to the food and are then cut into a specific size by blades. The product was prepared with flour and water and needled out of the machine, and dried at room temperature. The taste and aroma of the product are separately prepared and packed in a small sachet to garnish with—manufacturing of this type of product help for generating more employment opportunities for current society.

Conclusion

The experimental products, namely T1, T2, and T3, were prepared and subjected for sensory evaluation, and the T2 product was selected as the best product. T2 product was good in terms of color, taste, flavor, texture, and overall acceptability compared to T1 and T2. The moisture content of the T2 was 4%, and fat was about 5%, the protein content was about 12%, and the Carbohydrate was about 68%.

Acknowledgements

Authors thanks to Mrs. N.Mary Jones Rosette, MSc, M. Phil, MED, Head of the department, Principal, Department of chemistry, Rajiv Gandhi Degree College, Rajahmundry, for giving the opportunity for analysis and completion of this research work.

References

1. Amerine MA, Pangborn RM, Roseller EB. In Principles of Sensory evaluation of food, Academic Press, New York, and London 1965.
2. AOA. Official Method of Analysis: Association of Analytical Chemists. 19th Edition, Washington DC 2012, 121-130.
3. Carr TP, Weller CL, Schlegel VL, Cuppett SL, Guderian DM Jr, Johnson KR. Grain sorghum lipid extract reduces cholesterol absorption and plasma non-HDL cholesterol concentration in hamsters. Journal of nutrition 2005;(9):2236-40.
4. Farrar JL, Hartle D, Hargrove JL, Greenspan P. A novel nutraceutical property of select sorghum (Sorghum bicolor) brans: inhibition of protein glycation. NRL 2008;22(8):1052-6.