



Studies on Minerals Enrichment of Mix Vegetable Soup Powder Fortified with Papaya Leaf Powder and Jowar Powder.

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ABSTRACT

The present work was aimed to prepare dried vegetarian soup supplemented with some papaya leaves powder and jowar flour significantly enhanced the nutritional characteristics, were dried vegetarian soup mixtures had reasonable amounts of the required nutrients particularly calcium and iron. Moisture content and water activity predicted the extended shelf-life and stability of the dried soup mixtures. The results clearly demonstrated the usefulness of supplementing the dried vegetarian soup with papaya leaves powder and jowar flour enhances nutritional and technological quality.

Keywords: Corn Flour, Jowar Flour, Papaya Leaves Powder, Mixture

I. INTRODUCTION

Papaya leaf powder which is rich in minerals like Ca and Fe is used as one of the main ingredient in soup making papaya plant produce natural compounds (annonaceous acetogenins) in leaf bark and twig tissues that possess both highly antitumor and pesticidal properties. The presence of iron signifies that the leaves can be used against anaemia, tuberculosis and disorder of growth [5]. The proximate analysis of Indian sorghum grain gave the minerals 1.6% [2]. The dried corn contain 26.2% protein [4] The jowar flour contains 10.4gm protein [10]. Jowar or sorghum millet is grown in Maharashtra, Karnataka, Madhya Pradesh, Andhra Pradesh, Gujarat, Tamil Nadu. [10]

Soup powders offer special advantage for use in aircraft rations and in places where fresh vegetables are not available [1]. As the formulation and development of nutritious complementary foods from locally and a lot of attentions, the present research work aimed to prepare and supplement dried vegetarian soup mixtures with some papaya powder and jowar flour [3].

The objective of research was to improve nutritional qualities by soup.

II. MATERIALS AND METHODS

1. Raw material and Ingredients:

Papaya leaf, jowar, tomatoes, onion, black pepper, coriander, salt, msg, corn flour, sweet corn, bread crumbs were obtained from local market in Amravati.

2. Preparation of raw materials:

Papaya leaf, onion and tomato samples were sorted, washed, sliced and blanched and then drying was performed till 2% moisture in final product. Then milled and sieved into powdered form using hammer mill.

3. Formulation of the dried vegetarian soup mixtures:

In first batch (A) the soup mixture is fortified with papaya leaf powder (5%) and Jowar flour (5%) and corn flour (10%). In 2nd batch (B) 10% of papaya leaf powder with respect to 5% jowar flour and 10% corn flour. In 3rd batch (C) all the ingredient (papaya leaf powder, jowar flour, Corn flour) were taken at equal per cent while equal in 4th batch (D) 15% papaya and 10% corn flour was taken. The selection of proper quantity of papaya leaf powder is done on the basis of sensory

evaluation results and quantity of Iron and calcium we are getting out of it.

4. Sensory Evaluation:

A 10 member panel evaluated soup seasoning for colour, flavour, and taste preference. All the panellists were asked to indicate preference on 9 point hedonic scale and also to rank soup seasoning in order to overall preference. The sensory properties of soup seasoning was measured using 9 point hedonic scale method [11]

5. Proximate analysis:

Moisture, protein, fat, crude fibre, ash and iron contents of the dried vegetarian soup mixtures were determined according to the methods of AOAC [7]

a) Moisture:

Moisture content of soup seasoning was measured by modified vacuum oven method 925.09[7]. The moisture content of the dried soup seasoning was measured at room temperature on weight basis.

b) Fat:

Fat content was estimated by method 920.85[7]. The soup powder was

Extract with petroleum ether for 16 hours. The dried sample weight gave fat content profile.

c) Total ash:

5gm of samples was kept in muffle furnace at a temperature 525 degree Celsius for 6 hours. Desiccated ash was weighed as per 100gm sample weight (method 923.03 with slight modification) [7].

d) Crude fibres:

Crude fibre content was evaluated by ceramic fibre filters method 920.86[7]

e) Carbohydrate:

Carbohydrate concentration was estimated by subtracting other solids (ash + fat + protein +fibre) from 100g/100g.

f) Protein:

Protein percentage was determined using modified Kjeldahl procedure with a nitrogen to protein conversion factor of 6.25 (method 960.52) .250 mg of sample was digested with concentrated H₂SO₄ and digestion mixture, digested sample was put for protein estimation.

% protein = % nitrogen 6.25

g) Iron:

The iron is determined by converting iron to ferric form by using oxidizing agents like potassium persulphate by potassium thiocyanate from the red

ferric thiocyanate which is measured colorimetric ally at 480 nm [12]

III. RESULTS AND DISCUSSION

A. Sensory evaluation:

The selection of 5% papaya leaf powder by weight was done on the basis of sensory evaluation of all the samples of various papaya leaf powder percentage 5%, 10%, 15% from the sensory scores it was observed that as the percentage of papaya leaf powder increased in the jowar flour and corn flour the acceptance level decreased from the side of panel members.

Sample	A	B	C	D
Attribute				
Appearance	7.6	6.8	6.2	7.1
Colour	6.8	5.4	6.4	5.2
Taste	6.5	6.1	5.2	5.4
Flavour	7.2	6.8	5.2	6.2
Overall Acceptability	7.02	6.27	5.75	5.97

The 5% papaya powder sample got maximum scores(7) from panel members . The sensory evaluation scores of each and every sample were analysed and compared with respect to their attributes. The given table helped in making easy decisions regarding selection of the final sample.

Where A-5% papaya leaf powder , 5% jowar flour and corn flour 10% , B - 10% papaya leaf powder ,C control sample ,D 15% papaya leaf powder , 5% jowar flour and 10% corn flour.

Soup seasoning (A) gain more sensory scores than control soup seasoning at each attribute of overall acceptability. The appearance score of soup seasoning (A) increased to 7.6 from 6.2 of control soup seasoning (C). In case of colour the score increased from 6.4 to 6.8

of soup seasoning .The taste score of soup seasoning increased from 5.2 to 6.5. Flavour of soup seasoning was very much acceptable by panel members and gain the score 7.2 which was much higher than 5.2 of control sample. The overall acceptability of the control soup seasoning is 5.53 which is less as compared to 7.1 to 5 % papaya leaf powder, 5% jowar flour and 10%spinach soup seasoning.

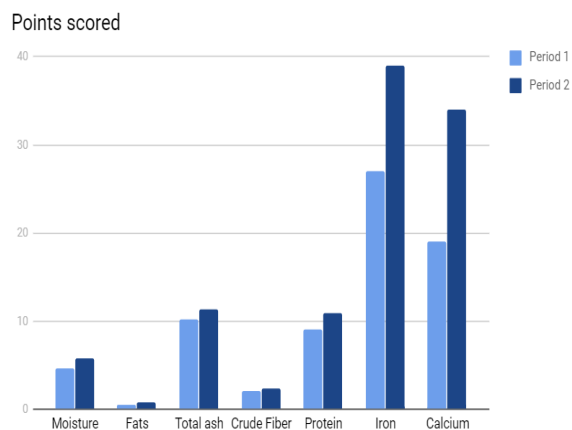
B. Proximate analysis:

Proximate analysis of overall acceptability and control soup seasoning was carried out and result obtained are presented in table .It is evident from the table that soup seasoning with the 5% papaya leaf powder, 5% jowar flour and 10% corn flour contained up to 39% iron as compared to 27% in control sample of mix veg soup as well as calcium quantity is also increased up to 34% from 19%.

Table 2 - proximate composition and comparison of overall accepted and control soup seasoning.

From this comparison it can be clearly observed that, the soup seasoning with papaya leaf powder, jowar flour and corn flour is superior in the nutritional qualities than the soup seasoning of mix vegetables soup quantity of iron is increased by about 105 and quantity of calcium is also increased soup and shelf life of the soup seasoning is good.

Particular	C (%)	A (%)
Moisture	4.60	5.70
Fats	0.5	0.8
Total ash	10.2	11.3
Crude Fiber	2	2.3
Protein	9.1	10.9
Iron	27	39
Calcium	19	34



IV. CONCLUSION

It could be concluded that the results of this study clearly demonstrated the usefulness of supplementing dried vegetarian soup mixture with papaya leaf powder, Jowar flour as a valuable food additive to enhance nutritional characteristics of the resultant soup powder.

They are reasonable source of Fe and Calcium with good digestibility, with good stability and extending shelf life. Along overall sensory quality of the soup samples, it had satisfactory sensory properties.

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