

Studies on Development and Standardization of Moringa Leaves Instant Soup Mix Powder Incorporated With Garden Cress Seeds

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ABSTRACT

The aim of the present study was to standardize and formulate the instant soup mix powder by using moringa leaves powder and garden cress seeds powder due to the highest contain of minerals like iron and calcium was found in them.. Different variations like 0:0%, 6:6%, 12:12% and 18:18% of moringa leaves powder and garden cress seeds powder were used for formulations. Prepared moringa leaves powder and garden cress seeds powder were mix with other spices to prepare instant soup powder. The formulation which content 6% moringa and garden cress seeds powder was the better composition and more acceptable. Proximate study of selected sample were content Moisture, Fat, Protein, Carbohydrate, ash and Energy value 7.4%, 8.33%, 35%, 41.07%, 8.2% and 379.25 kcal respectively. It was concluded that the prepared instant soup mix can be stored in aluminum pouches for three months at room temperature. So the developed moringa-garden cress instant soup mix powder is nutritionally superior and sufficient to meet day to day nutritional requirement as a supplementary diet.

Keywords-Moringa leaves powder, garden cress seeds, Formulation, Preparation, Proximate analysis, Aluminum pouches.

INTRODUCTION

Soup is a primary liquid food, generally served warm or hot, that is made by combining vegetables with stock and some thickening agents and fall under heterogeneous category of food. Instant soup is almost ready to eat and take less time to cook. It has an important role for maintain nutrition of the people by covering wide range of dried foods. There is a big demand of instant soup mixes in the global market. There are millions of peoples who suffered from malnutrition in the world; Instant soup mix can be great source of nutrition of them. (Sarker et. al., 2018).

People are passing hectic life due to urbanization. They do not have enough time

to cook foods and are becoming habituated to consume fast foods and something like that. Most of these foods are junk foods due to high sugar, fat, salt content, and low nutrient value in terms of protein, fiber, vitamin, and mineral content. Consumption of these nutrient- deficient foods ultimately leads to malnutrition and related diseases. Moreover, cereal- based dietary pattern may also exaggerate this condition. This problem could be overcome by supplying easy- to-cook nutrient- enriched foods.

The reason of choosing Moringa and Garden cress seeds as supplementary ingredients is their nutritional content which makes them a complete nutritional source for regular diet.

Moringa (*Moringa oleifera*) belongs to the family Moringaceae. It is multipurpose tree widely distributed in Bangladesh, India, Pakistan, Sri Lanka, grows in tropical and subtropical region of the world. Moringa can withstand both severe drought and mild frost conditions (Gopalkrishnan et. al., 2016). It is medium size tree about 10m high, the stem is normally straight that reaches a height about 1.5-2m, the extended branches grow in a disorganized manner. Moringa leaves are feathery with green to dark green elliptical leaflets 1-2cm. the fruits are trilobed capsule, green in colour and lengthwise 30-120cm long and 1.8cm wide (Paliwal et. al., 2011).

Moringa a storehouse of important nutrients and antinutrients. Moringa leaves contain protein (31.64%), Carbohydrates (38-60.75%), Fat (6.95%), Moisture (4.5%), Ash (9.29%), Fiber (11.37%). It also contain mineral like Iron (28mg/100gm), Magnesium (368mg), Phosphorous (204mg) (Mohajan et. al., 2016).

Moringa contain phytochemicals such as sterols, terpenoids, flavonoids, saponins, alkanoids. Moringa oleifera leaves are rich source of α -tocopherol (17.3mg/100gm), carotenoids (44.30-80.48mg/100gm). It also contains β -carotene, luteoxanthin, glucosinolate. Flavonoids such as flavanol glycosides (glucosides, rutosides, mononyl glucosides, kaempferol (0.05-0.67%), quercetin (0.07-1.26%). (Saini and Sivanesan, 2016).

Garden cress seeds (*Lepidium Sativum* L.) belongs to family Brassicaceae and botanically related to mustard growing in Middle East countries, Europe and USA. It is a small annual herb with 30-50 cm height. The leaves are variously lobed & entire, flowers are white or slightly pink petals and found in racemes & fruits are obovate pods about 5mm long with 2 seeds per pods, the seeds are small, oval shaped, pointed & triangular at one end, smooth about 2-3 mm long & 1-1.5 mm wide, reddish brown in color. It can grow in any

type of climate and soil condition. It can grow in moist soil and semi shade or even without shade. (Nakhleh et. al., 2014).

Garden cress seeds found to contain significant amount of Iron, Calcium & Folic acid in addition to Vitamin A & C. Garden cress seeds comprises good amount of Protein (23-25%), Moisture (5.69%), Fat(15-27%), Fibre (7.01%), Ash (4.65%), Carbohydrates (34-53%). It contains admirable amount of Iron (17-33mg/100 gm) & Zinc (4-5 mg/100 gm) & other minerals & vitamins.

Phytochemicals like phenolic compounds, alkaloids, cardiac glycosides, flavonoids, Tannins are present in Garden cress seeds. The seeds contain phenolic compounds like gallic acid, caffeic acid. Imidazole alkaloid like lepidine B, C, D, E and F and semilepidinose A and B. Sinapic acid (0.4710%). Glucosinolate like glucotropaeolin and 2-phenyl ethyl glucosinolate are also present.

Considering the overall points, the present research work has been aimed to formulate a Moringa-Garden cress healthy soup powder to give a support to country people a regular nutritional diet.

MATERIAL & METHODS

Procurement of Raw Material

Raw materials required during present investigation were procured from local market of Saralgaon such as garden cress seed, Sugar, Salt, Cumin powder, Ginger powder, Onion powder, Garlic powder, Corn flour, and Chilli powder etc. Most of the chemicals and equipments used in this investigation were of analytical grade which are obtained from College of Food Technology Saralgaon, Thane.

Physical Properties of Moringa- Garden cress Instant soup powder

The colour of Moringa- Garden cress Instant soup powder was determined by visual observations. Texture of Moringa-Garden cress Instant soup powder Seed was measured by Texture meter.

Chemical Properties of Moringa- Garden cress Instant soup powder

Proximate composition such as moisture, ash, crude fat, crude protein and crude fiber of all the Ingredients and Crackers incorporated with quinoa Seed was determined according to the procedures given in AOAC (2000). For moisture determination samples were dried in oven at 130°C for 60 minutes. For ash determination samples were placed in muffled furnace at 550°C to burn out all carbon compounds leaving in organic part (ash). Fat was determined by fat extraction unit by using n. Hexane. For fiber determination, samples were treated with 1.25% Sulphuric acid and Sodium Hydroxide solution. After filtration of digested material it was washed with hot water and then ignited. By calculating loss of weight after ignition, crude fiber contents were determined. Protein contents were determined by using Kjeldahls unit.

Sensory Evaluation of Moringa- Garden cress Instant soup powder

Prepared product were evaluated for sensory characteristics in terms of appearance, color, flavor, aftertaste, texture and overall acceptability by 10 semi-trained panel members comprised of academic staff members using 9- point Hedonic scale. Judgments were made through rating the product on a 9 point Hedonic scale with corresponding descriptive terms ranging from 9 'like extremely' to 1 'dislike extremely'. The obtained results were recorded in sensory score card.

Statistical Analysis of Moringa- Garden cress Instant soup powder

The analysis of variance of the data obtained was done by using completely randomized design (CRD) for different treatments as per the method given by Panse and Sukhatme (1967). The analysis of variance revealed at significance of $p < 0.005$ level S.E and C.D. at 5 percent level is mentioned wherever required.

Formulation of Moringa- Garden cress Instant soup powder

Instant soup powder prepared with incorporation varying levels of Moringa leaves powder and garden cress seed powder were investigated. The formulation

was made by varying levels of Moringa leaves and garden cress seed powders viz., 00:0, 6:6, 12:12 and 18: 18 percent respectively. Sample T1 Moringa and Garden cress incorporated instant soup mix was organoleptically acceptable and used for further study.

Ingredients	Treatments			
	T0	T1	T2	T3
Corn flour	10 g	10 g	10 g	10 g
Sugar	30 g	30 g	20 g	16 g
Cumin powder	12 g	10 g	8 g	8 g
Garlic powder	12 g	10 g	10 g	8 g
Ginger powder	12 g	10 g	10 g	8 g
Onion powder	14 g	10 g	10 g	8 g
Chilli powder	4 g	4 g	2 g	2 g
Salt	6g	4g	6g	4g
Moringa leaves powder	0g	6g	12g	18g
Garden cress seed powder	0g	6g	12g	18

Where,

T0- Control sample.

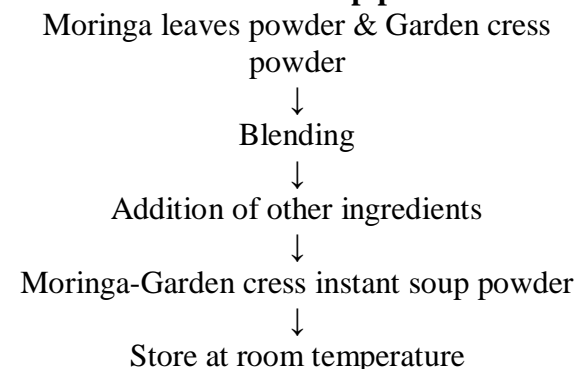
T1- 6 g Moringa leaves powder + 6 g Garden cress powder

T2- 12 g Moringa leaves powder + 12 g Garden cress powder

T3- 18 g Moringa leaves powder + 18 g Garden cress powder

Preparation of Moringa- Garden cress Instant soup powder

Flow sheet Preparation of Moringa- Garden cress Instant soup powder



Preparation of Moringa- Garden cress Instant soup powder

For preparation of Moringa- Garden cress Instant soup powder use 600ml of water for 100gm Moringa- Garden cress Instant soup powder. Boil water on low gas flame by the addition of Moringa- Garden cress Instant soup powder and then keep boiling these mixtures for 10 to 12 min.

RESULTS AND DISCUSSION

Physical properties of Moringa- Garden cress Instant soup powder

Physical parameters	Selected sample T1
Colour	Brown
Texture	Soft and Fine

Moringa- Garden cress Instant soup powder was Brown in colour which was determined by visual observation. The texture of Moringa- Garden cress Instant soup powder was soft and fine.

Chemical properties of Moringa- Garden cress Instant soup powder

Chemical parameters	Selected sample (T1)
Ash	8.2%
Moisture	7.4%
Fat	8.33%
Protein	35%
Carbohydrate	41.07%
Energy	450.24 kcal

The data on chemical properties of Moringa- Garden cress Instant soup powder Mix viz. moisture, fat, protein, ash, Carbohydrate and Energy was carried out and the results obtained were Moisture content in Moringa- Garden cress Instant soup powder was found to be (7.4%), Fat (8.33%), Ash (8.2%) Protein (35%), Carbohydrate (41.07%) Energy (450.24%) respectively, it concluded that Moringa-

Parameter	T0	T1	T2	T3
Colour	8	8.5	8	7
Flavour	7	8	7	6
Taste	7.5	8	7	6
Consistency	8	9	8	7
Appearance	7.5	8	7	7
Overall acceptability	8	9	7	8

Garden cress Instant soup powder rich in Protein.

Sensory Evaluation

In Organoleptic Evaluation Overall acceptability of T1 sample is more acceptable than sample T2 and T3. In the sensory analysis T1 was best results in color (8.5), Flavour (8), Taste (8), Consistency (9), Appearance (8) and Overall acceptability (9) score was noticed. All the Quality attributes value tabulated.

CONCLUSION

It may conclude that moringa leaves and Garden cress seeds can be effectively used in the preparation of nutritious soup powder by properly processing and optimizing the level of other ingredients in

appropriate proportion. Among the 4 formulation prepared, the formulation T1 found to be more acceptable. The health benefits of moringa leaves and garden cress are well known so this soup powder can act as a supplementary food and can satisfy the consumers' requirements.

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