



## DEVELOPMENT OF INSTANT HERBAL RASAM MIX

Dr.B.Premagowri\*

Assistant Professor, Clinical Nutrition &amp; Dietetics, PSG College of Arts &amp; Science, Coimbatore, Tamilnadu. \*Corresponding Author

## ABSTRACT

Viral infections play an important role in human diseases, and recent outbreaks in the advent of globalization and ease of travel have underscored their prevention as a critical issue in safeguarding public health. A variety of phytoconstituents derived from medicinal herbs have been extensively studied for antiviral activity. Various studies also proved that rasam as an effective treatment for cold, throat infection, fever and flu. The objective of present study was to develop instant rasam mix incorporated with selected herbs *solanum trilobatum*, *Oregano* & *Holy basil*. The instant herbal rasam mix with the three selected herbas which have the antiviral properties was developed with three variations, variation I (*solanum trilobatum* 45g, *oregano* 10g, *holy basil* 5g), variation II (*solanum trilobatum* 40g, *oregano* 15g, *holy basil* 5g) and variation III (*solanum trilobatum* 35g, *oregano* 20g, *holy basil* 5g). Sensory evaluation was done for the three variations. The most accepted variation III was selected for physicochemical, nutrients and microbial analysis. Nutrient analysis of energy was 356.83 kJ, carbohydrates was 73.69g, protein was 9.18g, fat 4.87g, fiber 2.3g, potassium 289mg and vitamin C was 4.6mg respectively. Storage stability was found to be one month without preservative. In today's world people prefer healthy Ready-to-cook and Ready-to-Eat food products due to the lack of time. Thus, identifying novel antiviral herbs and formulated as convenience foods is of critical importance.

KEYWORDS : Antiviral, Herbs, Instant rasam mix

## Introduction:

Currently, herbs are applied to the treatment of chronic and acute conditions and various ailments and problems such as cardiovascular disease, prostate problems, depression, inflammation, and to boost the immune system. Traditional herbal medicines played a prominent role in the strategy to contain and treat severe acute respiratory syndrome (Chan et al, 2003). WHO has recognized the important contribution of traditional medicine to provide essential care (WHO, 2013).

Herbal plants, plant preparations and phytoconstituents have proved useful in attenuating infectious conditions and were the only remedies available, till the advent of antibiotics. Among infectious diseases, viral diseases in particular, remain the leading cause of death in humans globally. Phytoconstituents derived from medicinal herbs have been extensively studied for antiviral activity (Ganjhu et al. 2015). The Natural Health Product Regulations of Canada promulgated in January 2004 is an important step toward modernization of plant-based product usage in healthcare. This regulation encourages usage of modern technology and evidence-based scientific support toward promoting medicinal plants and the associated products (Siow et al., 2005).

Viruses are responsible for a number of human pathogenesis including cancer. Several hard-to-cure diseases and complex syndromes including Alzheimer's disease, type 1 diabetes, and hepatocellular carcinoma have been associated with viral infections. Moreover, due to increased global travel and rapid urbanization, epidemic outbreaks caused by emerging and re-emerging viruses represent a critical threat to public health, particularly when preventive vaccines and antiviral therapies are unavailable (Tzung et al, 2014.). Natural products such as herbal plant extracts, plant derived compounds, extracts of specific plant parts, dietary supplements and nutraceuticals find wide application in treating ailments ranging from common to rare infectious and non-infectious diseases. According to reports, one quarter of the commonly used medicines contain compounds isolated from plants (Rates, 2001). The study was carried out with the objectives as to formulate, evaluate and analyse the instant rasam mix incorporated with herbs *solanum trilobatum*, *Oregano* & *Holy basil*.

## Methodology

**Selection and procurement of raw ingredients:** *Solanum trilobatum*, *Holy basil*, *Oregano* were collected from herbal gardens. The following ingredients onion, garlic, tomato, cumin, pepper, coriander, red gram dhal were procured from reputed super markets.

**Processing of herbs:** Leaves were washed thoroughly with running water to remove all the adhering dirt and dust particles. The residual moisture was evaporated at a room temperature at one to two hours. The leaves were dried in hot air oven at  $40 \pm 50^\circ\text{C}$ . Then it ground into fine powder and stored in air tight container till for further use.

**Processing and preparation of ingredients:** Onion, garlic and tomatoes were washed well in running tap water. They were cut into small pieces and dried in the hot air oven at  $40 \pm 50^\circ\text{C}$  for eight hours separately. Then ground into powder with help of mixer grinder. The following spices like cumin, black pepper and coriander seeds were roasted and grind into fine powder separately. And the red gram dhal also roasted and grind into fine powder.

## Standardisation of herbal rasam mix:

The processed herbal powder were mixed with required amount of spices and vegetables grouped into variation-I, II and III. The variations were made for 100g. Around 60g was the herbal mix and the remaining 40g were from vegetables, spices powder which is onion, garlic and tomato (5g each), cumin, black pepper (2.5g each), coriander powder (5g) and red gram dhal powder (15g). The three variations were displayed in below table

Table-I Instant rasam herbal mix herbs-variation

S.no	Selected herbs	Variation I (g)	Variation II (g)	Variation III (g)
1	<i>Solanum trilobatum</i>	45	40	35
2	<i>Oregano</i>	10	15	20
3	<i>Holy basil</i>	5	5	5
Total		60	60	60

**Organoleptic evaluation:** The formulated three variations were given to 25 semi - trained panel members with care to evaluate the products for various sensory parameters such as appearance, colour, taste, texture, flavour and overall acceptability by using five points hedonic scale.

**Physicochemical properties:** The highly scored variation of herbal rasam mix was subjected to physicochemical analysis to test the moisture and ash and they were analysed using standard procedure AOAC method.

**Analysis of nutrients:** The highly scored variation herbal rasam mix was subjected to nutrient analysis which include energy, carbohydrate, protein, fat, fibre, potassium and vitamin C by using standard procedure of AOAC method.

**Microbial analysis of herbal rasam mix:** To determine the storage stability, the highly scored variation herbal rasam mix were subjected to microbial analysis and total bacterial count which was done at initial 30 to 60 days to find the presence of bacteria, yeast and mould.

**Cost calculation, packaging and labelling:** The cost of herbal rasam mix was calculated based on the cost of raw ingredients. The herbal rasam mix was packed and sealed. Labels for food packaging identify and promote the use of products to the costumers. Nutritional labelling was designed to provide necessary information like ingredients list, nutritional facts, manufactured date, cost price, storage method, cooking method and serving size.

**Results and Discussion**

The results pertaining to study were discussed as organoleptic evaluation, physio-chemical properties, nutritional analysis, storage stability, cost calculation and packaging.

**Sensory evaluation of the herbal rasam mix**

Sensory evaluation of the herbal rasam mix was done by using five points hedonic scale. The mean values scores for appearance, colour, flavour, texture, taste, overall acceptability are presented in the below table.

**Table-2 Sensory evaluation of the herbal rasam mix**

Criteria	Control	Variation I	Variation II	Variation III
Appearance	4.64±0.63	4.24±0.83	4.4±0.57	4.72±0.45
Colour	1.48±1.00	3.92±1.15	4.0±1.08	4.0±1.04
Flavour	4.48±0.87	4.12±0.83	4.28±0.84	4.32±0.74
Texture	4.12±0.33	3.96±0.35	4.04±0.2	4.08±0.27
Taste	4.44±0.71	4.12±1.20	4.24±1.16	4.52±0.65
Overall acceptability	4.28±0.73	4.08±0.57	4.32±0.62	4.36±0.75

From the below table it is clear that the mean score of variation-III was found to be high when compared to that of variation-I and variation-II. Hence it is clear that the presence of *solanum trilobatum* (35g) and oregano (20) in high proportion was highly acceptable.

**Physicochemical analysis of the instant herbal rasam mix**

The physic-chemical constituents such as ash, bulk density, swelling capacity and moisture were carried out using standard procedures for the instant herbal rasam mix samples.

**Table-3 Physicochemical analysis of the instant herbal rasam mix**

Criteria	Ash content (%)	Bulk density (g/cm3)	Swelling capacity (ml)		Moisture (%)
			Initial	After one hour	
Control	5.4%	2.5	5.0	5.8	2.1
Variation III	7.91%	3.6	5.6	6.2	4.4

From the above table it was clear that the ash content of the developed product was 7.91% whereas control was 5.4%, bulk density was 3.6 g/cm3 for the developed rasam mix and 2.5

g/cm3 for control. The swelling capacity was analysed as 5.6ml initial and 6.2ml final (after one hour) for the developed product. The moisture was also analysed as 4.4% for the developed product and 2.1% for the control.

**Nutritional analysis of herbal rasam mix**

The proximate principle includes the nutrients like energy, carbohydrates, protein, fat, fiber, potassium and vitamin C and these nutrients were analysed and compared with control

**Table-4 Nutritional analysis of herbal rasam mix**

Criteria	Control	Variation III
Energy (kcal)	351.25	356.83
Cho (kcal)	47	74
Protein (g)	6	9
Fat (g)	4	5
Fiber (g)	1.2	2.3
Potassium (mg)	20	208
Vitamin c (mg)	1.8	4.6

It was clear from the above table that the developed instant rasam mix nutrient analysis of energy content was 356.83 kcals, carbohydrates was 73.69g, protein was 9.18g, fat 4.87g, fiber was 2.3g, vitamin C was 4.6mg and potassium was 289mg respectively. It was found to be better

**Storage stability**

The experimental of instant rasam mix were kept for a storage period of 60 days and it was subjected to microbial analysis. The microbial analyses were attributed for the count of total yeast, mould and bacteria. The total bacterial count was analysed and discussed below.

**Total bacteria count of herbal rasam mix**

Bacteria are the main cause of spoilages in food products. The analysis was carried out of using standard procedures. The total bacterial count of Variation-III Instant herbal rasam mix has no growth occur during 1st day of storage period. Then after 60days it has low level of growth ranged from 13×106, 7×107 and 2×108 during 60th day.

**Cost calculation and packaging**

The cost of 100g of development of instant herbal rasam mix was calculated by computing the cost of the raw ingredients. It was found that the cost of the 100g of the development of instant herbal rasam mix costs much low and are affordable for all population of our country. The instant herbal rasam mix was in the powdered form, so the packaging is necessary for this product. Hence the aluminium foil pouches were used to pack the developed powder as it protects the product from the spoilage and contaminants.

**Conclusion:**

Plants, herbs, and ethnobotanicals have been used since the early days of humankind and are still used throughout the world for health promotion and treatment of disease. Many traditional medicinal plants have been reported to have strong antiviral activity and some of them have already been used to treat people who suffer from viral infection. The developed product was a healthy and nutritious traditional convenience food to people. In today's world people prefer healthy Ready-to-cook and Ready-to-Eat food products due to the lack of time. Herbs with antiviral properties were used to formulate instant herbal rasam mix which possesses major nutrients such as energy, carbohydrates, protein, fiber, vitamin C and potassium. The sensory characteristics were most acceptable which authenticates it would be a healthy and nutritious nourishment and accompaniment dish for people of all age groups.

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