

Development of “Ashtaguna manda” As Ready-To-Eat (RTE) Therapeutic Food

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Abstract:

Introduction: Ready-to-eat (RTE) foods require no cooking and are pre-cleaned, pre-cooked and packaged for immediate consumption. About 30% of evening meals were prepared outside the home and two-thirds of shoppers purchase prepared foods from convenience stores. **Objective** of the study is to develop “*Ashtaguna manda*” as RTE therapeutic food form. **Material and Methods:** Authentication and Quality Control analysis were performed. Percentage of moisture, ash and carbohydrate, protein and fat (Kjeldahl method) was determined according to the method described. **Result:** *Ashtaguna manda* RTE form exhibited a whitish colour initially ('0' day), which turned creamish white after 3rd and 6th months of storage. The odour remained unchanged for up to 6 months and the sample retained its initial form. The pH value indicating acidity and alkalinity was 6.45 initially, 5.26 at 3rd month and 5.39 at 6th month, showing slight acidity. The total solids ranged from 1.534% initially to 1.746% at 3rd month and 1.850% at 6th month. Specific gravity was 1.007 initially, 1.012 at 3rd month and 1.009 at 6th month. Non-reducing sugars were present, aiding in consistency and preservation, while reducing sugars were absent throughout the six month storage period. Carbohydrates, proteins, and fats were present throughout the six month storage. The sample showed absence of *E.coli*, *S.aureus*, *P.aeruginosa* and *S.abony* during the six month storage. The total bacterial count was 03 cfu/gm, 05 cfu/gm, and 07 cfu/gm, and the total fungal count was 01 cfu/gm, 03 cfu/gm, and 05 cfu/gm at '0' day, 6th and 9th months respectively. Sensory evaluation of the RTE therapeutic food was assessed in 15 healthy individuals for the evaluation of quality food product and it was generally well accepted by most healthy panellists. **Conclusion:** The investigation indicates that the RTE therapeutic food remained suitable under accelerated conditions for beyond 6 months of storage. The results from this study can serve as a reference for establishing pharmacopeia standards for *Ashtaguna manda*, highlighting the necessity of stability studies for assessing quality food product.

Keywords: Ashtaguna manda, Ready-to-Eat, Pathya kalpana, Stability, Sensory evaluation

Introduction:

In contemporary Indian society, changing lifestyles have significantly impacted dietary habits, leading to a rise in dining out and the popularity of convenience foods. With more people leading busier lives, the convenience of RTE products has made them an attractive alternative to home cooking, revolutionizing India's processed food industry¹. There are a lot of factors that are responsible for the growing demand for RTE food. The topmost amongst these is lack of time. It's just easier to make for eat than to spend two hours in preparing it². Heat or mixing in hot water and eat food products are the best alternatives to traditional cooking, especially when one do not have the time to cook something that is healthy and wholesome. These RTE foods need only be heated or mixed in the boiling water for a few minutes and served. RTE foods are completely safe for consumption, shelf-stable and can be safely stored at room

temperature without fear of contamination³. *Ashtaguna manda kalpana* is part of the *Pathya kalpana* which benefits both healthy and diseased individuals. It can be prescribed for those suffering from *Jwara* (fever), *Ajeerna* (indigestion) and *Agnimandya* (low digestive fire) where properties like *deepana* (digestive stimulant), *paachana* (digestive) and *ruchikara* (appetizing) are needed.⁴ Keeping all these facts in the mind, development of “Ashtaguna manda” as RTE therapeutic food has been prepared.

Materials & Methods:

Ingredients & Rasapanchaka of “Ashtaguna manda”^{5, 6,7,8,9}

Table.1: Showing Rasa-panchaka of Ashtaguna manda

Drugs	Latin name	Rasa	Guna	Veerya	Vipaka	Dosha karma	Therapeutic actions
<i>Dhanyaka</i>	<i>Coriandrum sativum</i> Linn	<i>Kashaya, Tikta, Katu</i>	<i>Laghu, Snigdha</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Tri-doshahara</i>	<i>Deepana, Pachana, Mootrala</i>
<i>Nagara</i>	<i>Zingiber officinale</i>	<i>Katu</i>	<i>Ruksha, Teekshna, Guru</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Vata-kaphahara</i>	<i>Agnideepana, Jwarahara, Kasa-Shwasahara</i>
<i>Maricha</i>	<i>Piper nigrum</i> Linn	<i>Katu</i>	<i>Laghu, Teekshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kapha-vatahara</i>	<i>Deepana, Jwaraghna, Arshoghna</i>
<i>Pippali</i>	<i>Piper longum</i> Linn	<i>Katu</i>	<i>Laghu, Snigdha, Teekshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Vata-kaphahara</i>	<i>Deepana, Jwaraghna, Rasayana</i>
<i>Saindhava lavana</i>	<i>Sodium chloride</i>	<i>Lavana, Madhura</i>	<i>Laghu, Snigdha, Sookshma</i>	<i>Sheeta</i>	<i>Madhura</i>	<i>Tri-doshahara</i>	<i>Deepana, Pachana, Ruchya, Chakshushya</i>
<i>Mudga</i>	<i>Phaseolus radiates</i> Linn	<i>Madhura</i>	<i>Laghu, Ruksha</i>	<i>Sheeta</i>	<i>Madhura</i>	<i>Tri-doshahara</i>	<i>Deepana, Brimhana, Shukrala, Jeevaneeya, Chakshushya</i>
<i>Raktashali</i>	<i>Oryza sativa</i> Linn	<i>Madhura, Kashaya</i>	<i>Laghu, Snigdha</i>	<i>Sheeta</i>	<i>Madhura</i>	<i>Tri-doshahara</i>	<i>Deepana, Brimhana, Mootrala, Balya, Jwarahara</i>
<i>Hingu</i>	<i>Ferula foetida</i> Regal	<i>Tikta, Katu</i>	<i>Laghu, Teekshna, Snigdha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Vata-kaphahara</i>	<i>Pachana, Anulomana, Ruchya</i>

Methodology:

1. Collection and Authentication of ingredients of “Ashtaguna Manda”:

- *Raktashali* was obtained from a well-known grocery store in Belagavi, while other ingredients, such as *Mudga*, *Trikatu*, *Hingu* and *Saindhava lavana*, were sourced from the KLE Ayurveda Pharmacy Unit Khasbhag, Belagavi.

Table.2 showing Proportion and ingredients of *Ashtaguna manda*:

Ingredients	Quantity	Metric equivalent
<i>Raktashali</i>	4 pala	192 gm
<i>Mudga</i>	1 pala	48 gm
Other ingredients:		
• <i>Dhanyaka choorna</i>	2 gm	-
• <i>Trikatu choorna</i>	2 gm	
• <i>Saindhava lavana</i>	2 gm	
• <i>Shuddhi Hingu</i>	1 gm	
Water	1:14 pala	672 ml

- The "*Ashtaguna manda*" was prepared in the FSSAI registered "*Pathyahara Unit*" of the hospital section of KLE's Shri.B.M.Kankanawadi *Ayurveda* hospital by following standard operating procedures (SoP).

Standard Operative procedure for the preparation of *Ashtaguna manda*:

- 620 gms of *Rakta shali* placed in a dry, clean container.
- Then 155 gms of *Mudga* added to this.
- 14 times of potable water poured into the vessel, stirred properly and boiled on a medium flame until the amount reduced to 1/4th of the original volume
- Then, *manda* was filtered in another clean vessel.
- *Prakshepaka dravyas* in the proportion of *Tri-katu choorna*, *Dhanyaka choorna* (Each 30 gm), *Saindhava lavana* (15 gm) and *Hingu* (15 gm) were added and stirred well.
- Then it was dried under air drier at the temp of 50 degree and 200 gm powder obtained was collected.
- The collected powder passed under UV chamber and stored in air tight bottles and mentioned name as ready to eat powder.

Dosage: 1 pala (48 ml)

**Image.1 showing final developed product of *Ashtaguna manda* as RTE Therapeutic food****II. Analytical Parameters of *Ashtaguna manda*:****Organoleptic Evaluation:**

Ashtaguna manda was evaluated for its organoleptic characteristics, including *varna* (colour), *gandha* (odour), and *ruchi* (taste), which were analyzed and recorded. The authenticity of each ingredient was confirmed by comparing their characteristics with those described in the literature.

Physico-chemical Investigations:

Physico-chemical tests were conducted on *Ashtaguna manda* to determine total solids, specific gravity, and pH value.

Phytochemical Investigations:

Phytochemical tests were performed to identify various functional groups, including tannins, mucilages, sterols/terpenoids, ascorbic acid, alkaloids, saponins, starch, flavonoids, glycosides, and carbohydrates.^{10, 11}

Microbial Overload:¹²

A study was conducted to assess bacterial and fungal growth.

Reagents and Chemicals:

All reagents and chemicals used in the study were of analytical grade.

Observation & Results of Analytical study:

1. Organoleptic evaluation of *Ashtaguna manda* Powder:

Ashtaguna Manda in powder form was evaluated for its organoleptic characteristics, including *varna* (colour), *gandha* (odour), and *ruchi* (taste), which were analyzed and recorded.

Table.no.3 showing organoleptic characteristics of *Ashtaguna manda* powder

Tests	Results
Form	Powder
Colour	Light brown
Taste	Salty
Odour	Characteristic

The authenticity of each ingredient was confirmed by comparing their characteristics with those described in the literature.

2. Physico-chemical Investigations of *Ashtaguna Manda* Powder:

Physico-chemical tests were conducted on *Ashtaguna manda* to determine total solids, specific gravity, and pH value.

Table.no.4 showing Physio-chemical characteristics of *Ashtaguna manda* powder

Tests	Results
Moisture Content	3.990 %
Ash Value	22.788 %
Acid insoluble Ash	3.948 %
Water soluble extractive	58.423 %
Alcohol soluble extractive	6.000 %
pH	6.4

Phytochemical Investigations of *Ashtaguna manda* Powder:

Phytochemical tests were performed to identify various functional groups, including tannins, mucilages, sterols/terpenoids, ascorbic acid, alkaloids, saponins, starch, flavonoids, glycosides, and carbohydrates.

Table.no.5 showing Phytochemical characteristics of *Ashtaguna manda* powder

Tests	Water	Alcohol
Test for Reducing sugar	Negative	Negative
Test for Monosaccharides	Positive	Negative
Test for Flavonoids	Positive	Negative
Test for Tannins	Positive	Negative
Test for C.Saponin glycosides	Negative	Negative

3. Microbial Overload (Qualitative) of *Ashtaguna manda* powder:

A study conducted to assess bacterial and fungal growth.

Table.no.6 showing Microbial assessment test for *Ashtaguna manda*

	Limit (as per IP*)	Results
E coli	Absent/100ml	Absent
S aureus	Absent/100ml	Absent
P aeruginosa	Absent/100ml	Absent
S abony	Absent/100ml	Absent

IP* =Indian Pharmacopia

4. Microbial Limit Test (Quantitative) of *Ashtaguna manda* Powder:**Table.no.7 showing microbial limit test for *Ashtaguna Manda* powder**

	Limit (As per IP)	Results
Total Bacterial Count	30-300 cfu/ml	No growth
Total Fungal Count	10-100 cfu/ml	No growth

5. Nutritional Analysis of *Ashtaguna manda* powder / 100 gm:**Table.no.8 showing Nutritional Analysis of *Ashtaguna manda* powder / 100 gm**

Sl.No	Parameter	Unit	Observed Value
1	Carbohydrates	gm	62.2
2	Fat	gm	2.66
3	Protein	gm	9.40
4	Total Energy	k.cal	331.5
5	Magnesium	mg/100gm	0.00
6	Phosphorous	mg/100gm	0.00
7	Potassium	mg/100gm	0.00
8	Manganese	mg/100gm	0.00
9	Iron	mg/100gm	2.50
10	Copper	mg/100gm	0.98
11	Zinc	mg/100gm	4.16
12	Calcium	mg/100gm	8.75

Stability Study of *Ashtaguna manda* RTE therapeutic food:

An accelerated stability study was carried out in accordance with ICH guidelines.

The storage conditions for the accelerated stability study were specified as:

- Temperature: 40°C ± 2
- Relative Humidity (RH): 75% ± 5

Changes were monitored over a 6-month period, with evaluations at 0th, 3rd and 6th month period. A 10% degradation threshold was set to extrapolate the accelerated stability data as the acceptable limit. The parameters evaluated during the stability study included:

- The characteristics of a food product including colour, odour, taste and form.
- Physico-chemical characteristics such as total tannin, total saponin, total ash, pH, water-soluble extractive value and loss upon drying.
- Microbial load

Samples were taken from the stability chamber at 0th, 3rd and 6th months and assessed for the aforementioned parameters.

Results of Stability study:

The stability study results for *Ashtaguna Manda*, including physico-chemical, phytochemical, nutrient, and microbial evaluations for '0' month, '3' month & '6' month period are listed below.

Table.no.9 showing organoleptic parameters of *Ashtaguna manda*

Test Attributes	Analytical Results		
	'0' month	'3' month	'6' month
Colour	Whitish	Creamish white	Creamish white
Odour	Faint	Faint	Faint
Form	Liquid	Liquid	Liquid

The organoleptic parameters form the basic criteria for selecting a raw drug and also to confirm the finished product.

Table.no.10 showing physico-chemical parameters of *Ashtaguna manda*

Test Attributes	Analytical Results		
	'0' month	'3' month	'6' month
pH value	6.45	5.26	5.39
Specific gravity	1.007	1.012	1.009
Total solid content (%w/w)	1.534 %	1.746%	1.850%

Different physic-chemical parameters of *Ashtaguna manda* such as total solids, specific gravity, and pH were evaluated using standard pharmacopoeial methods.

Table.no.11 showing phytochemical parameters of *Ashtaguna manda*

Test Attributes	Analytical Results		
	'0' month	'3' month	'6' month
Tannin	-ve	-ve	-ve
Reducing sugar	-ve	-ve	-ve
Steroids	-ve	-ve	-ve
Pentose sugar	-ve	-ve	-ve
Non-reducing sugar	+ve	+ve	+ve
Hexose sugar	-ve	-ve	-ve
Alkaloids	-ve	-ve	-ve
Saponin Glycosides	-ve	-ve	-ve
Flavonoids	-ve	-ve	-ve
Cardiac Glycosides	-ve	-ve	-ve
Anthraquinone Glycosides	-ve	-ve	-ve

Phytochemical analysis reveals the presence of tannins, mucilage, ascorbic acid, alkaloids, saponins, glycosides, flavonoids and carbohydrates in the formulation, whereas sterols/Terpenoids and starch were absent as given in Table 4.

Table.no.12 showing nutritional profile of *Ashtaguna manda*

Test Attributes	Analytical Results		
	'0' month	'3' month	'6' month
Carbohydrates	+ve	+ve	+ve
Proteins	+ve	+ve	+ve
Fats	+ve	+ve	+ve

The *Ashtaguna manda* was analyzed for its nutritional and textural properties. Percentages of moisture, ash and carbohydrate, protein and fat (Kjeldahl method) were determined according to the method described by AOAC (2002)¹³.

Table.no.13 showing Effect on Total microbial count and pathogens

Test attributes		Results		
Test for specified Micro-organisms (Qualitative)	Limits (As per API)	'0' month	'3' month	'6' month
E. coli	Absent/100gm	Absent	Absent	Absent
S. aureus	Absent/100gm	Absent	Absent	Absent
P.aeruginosa	Absent/100gm	Absent	Absent	Absent
S. abony	Absent/100gm	Absent	Absent	Absent
Microbial limit test				
Total Bacterial Count	30 – 300 cfu /gm	03 cfu /gm	05 cfu /gm	07 cfu /gm
Total Fungal Count	10 – 100 cfu	01 cfu /gm	03 cfu /gm	05 cfu /gm

	/gm			
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Medicinal plant matters normally carry bacteria and moulds often originating in soil in high numbers. In the present formulation, the microbial count was within permissible limits⁽¹⁴⁾, which indicates the proper hygiene norms followed during the preparation of formulation and packing.

Packaging of Ready-to-eat food “*Ashtaguna manda*” powder:

1. “*Ashtaguna manda*” ready-to-eat therapeutic food in powder form was made available in sachet form.
2. It was placed and stored under hygienic conditions in a room intended for that purpose.
3. Sachet was labelled for the product inside.
4. Nutritional labelling was made.

III. Packaging of Ready-to-eat food “*Ashtaguna manda*”.

The ready-to-eat therapeutic food “*Ashtaguna manda*” was packaged in sachets and stored in a hygienic room. The sachets were labeled with shelf-life and nutritional information.

IV. Sensory evaluation of the Ready-To-Eat therapeutic food

Sensory Evaluation of the *Ashtaguna manda* RTE food product was carried out on the 15 healthy subjects on appearance, taste, smell, flavour and texture parameters was tested for acceptance of the new food product at the Swaasthya Rakshana OPD of KAHERs’ Shri. B.M.Kankanawadi *Ayurveda* Hospital, Belagavi. The Sensory Evaluation protocol was approved by institutional Human Ethical Committee of the College (BMK/IAEC/Res.No.- BMK/21/PG/SW/4).

Sensory evaluation of the ready-to-eat therapeutic food:

The *Ashtaguna manda* RTE therapeutic food was assessed by 15 healthy individuals between the age of 18 and 45 years. Sensory evaluation based questionnaire was used to evaluate the colour, flavour, taste, texture and overall acceptability of the food. Healthy panellists gave good comments about the Ready-to-Eat food. *Ashtaguna manda* RTE therapeutic food was subjected to sensory evaluation and scores were recorded for different parameters.

Results of Sensory Evaluation of *Ashtaguna manda*:

Table.no.14 showing comparison of age groups with levels of Appearance of food, levels of Taste of food, levels of Temperature of the food and levels of Acceptability of food and their total by Mann-Whitney U test.

Variables	Age < 30yrs				Age >30yrs				Z-value	p-value
	Mean	Median	QR	SD	Mean	Median	QR	SD		
Appearance of food	18.33	20.00	5.00	2.50	17.50	17.50	5.00	2.74	0.4714	0.6374
Taste of food	19.44	20.00	0.00	1.67	19.17	20.00	0.00	2.04	0.1179	0.9062
Temperature of the food	15.56	15.00	10.00	4.64	15.83	17.50	10.00	4.92	-0.0589	0.9530
Acceptability of food	18.89	20.00	0.00	2.20	20.00	20.00	0.00	0.00	-0.6482	0.5169
Total Score	71.67	70.00	10.00	8.29	72.50	72.50	15.00	6.89	0.0589	0.9530

There were no statistically significant results when comparing appearance, taste, temperature, and acceptability of the food between those below 30 years and those above 30 years.

Table.no.15 showing comparison of male & female with levels of Appearance of food, levels of Taste of food, levels of Temperature of the food and levels of Acceptability of food & their total

Variables	Male				Female				Z-value	p-value
	Mean	Median	QR	SD	Mean	Median	QR	SD		
Appearance of food	17.14	15.00	5.00	2.67	18.75	20.00	2.50	2.31	-0.9837	0.3253

Taste of food	20.00	20.00	0.00	0.00	18.75	20.00	2.50	2.31	0.7522	0.4519
Temperature of the food	13.57	10.00	10.00	4.76	17.50	20.00	5.00	3.78	-1.4466	0.1480
Acceptability of food	19.29	20.00	0.00	1.89	19.38	20.00	0.00	1.77	0.0000	1.0000
Total Score	70.00	70.00	10.00	5.77	73.75	77.50	10.00	8.76	-1.2730	0.2030

No statistically significant results were observed in appearance, taste, temperature, and acceptability between genders. However, males rated the taste slightly higher, while females rated the appearance, temperature, and acceptability higher. Overall, females showed a higher acceptance of the food.

Discussion:

Ashtaguna manda is a liquid preparation intended for internal use and is part of the therapeutic food preparations described under *Pathya kalpana*. Moisture content is crucial for determining the quality of raw drugs. High moisture content reduces the drug's quality and efficacy. The moisture content of *Ashtaguna manda* powder was 3.990%. The ash value indicates the inorganic substances present in the drug after incineration, which was 22.788%.

Acid insoluble ash was 3.948%. Extractive values in water and alcohol were tested. Lower extractive values suggest poor processing or adulteration. Alcohol-soluble extractive values were 6%, and water-soluble extractive values were 58.423%, with a pH of 6.4.

The presence of non-reducing sugar, proteins, amino acids, and carbohydrates was discovered by qualitative phytochemical analysis, indicating possible health advantages. Reducing sugars, hexose sugar, steroids, flavonoids, tannins, alkaloids, glycosides, and saponins were absent. High alkaloid content in food is detrimental to health, causing damage to muscles, blood vessels, and other soft tissues¹⁸. Plants rich in polyphenols that contain saponins can stimulate weight gain in animals and replace growth hormones and antibiotics¹⁹. *Ashtaguna manda* established roles in antioxidant, anti-inflammatory, and anti-cancer mechanisms underscore its potential applicability in various therapeutic interventions²⁰.

Food processing significantly influences the content and quality of carbohydrates. Heating and cooling food affects its starch content. Cereal grains (*Shooka dhaanyas*) are typically ground into refined flour for cooking. Food processes like heating and frying cause fat polymerization, altering the colour and viscosity of the fat. Oxidative reactions can reduce the nutritional value of foods. Carbohydrate content was 62.2mg/100gm, with sugar content identified as 0.016mg/100gm due to the starch content of *shaali*. Protein content was 9.40mg/100gm, attributed to *mudga*, which contains protein as a main nutrient. Fat content was 2.66mg/100gm. Copper content was 0.98mg/100gm, important for maintaining the strength of the skin, blood vessels, epithelial, and connective tissue. Zinc content was 4.16mg/100gm, with cellular metabolism and antioxidant properties that may protect against accelerated aging and help fasten the healing process after an injury. Magnesium, phosphorus, manganese and potassium were absent in the tested formulation. Total calories (energy) produced were 331.5 K.Cal due to the carbohydrate and fat content which is considered the Recommended Daily Allowances (RDA) of the developed formulation. Overall, *Ashtaguna manda* is a good source of macro, micro and mineral composition, meeting nutritional requirements and aligning with prior research.

While microorganisms such as mould, bacteria and yeast proliferate in environments with high water activity. Low water activity will dry nutritious items exhibit stability against microbial decomposition and can be classified as ambient-stable products²¹. The microbiological load of prepared RTE *Ashtaguna manda* in powdered form fell within allowable bounds, demonstrating appropriate raw material handling and fulfilling processing parameters that produced a high level of hygienic quality proving *Ashtaguna manda* is safe to consume.

No significant changes were observed in organoleptic characters and microbial load after a six month accelerated study. Environmental elements including temperature, humidity and light cause *Ashtaguna manda* quality to change over time. At regular intervals, a number of parameters were measured, including total ash, acid insoluble ash, pH, moisture content and total microbial count. Over the course of the anticipated shelf-life and six months of storage, the stability study identified the organoleptic, physico-chemical, phytochemical, nutritional, and microbiological aspects of the finished product. Up to six month,

the accelerated stability data demonstrated very good stability. The pH value slightly decreased, indicating slight acidity over time, and total solids and specific gravity showed minor variations.

Non-reducing sugars were present throughout the 6-month storage, while reducing sugars were absent. Total alkaloids, monosaccharides, pentose sugar, hexose sugar, flavonoids, tannins, cardiac glycosides, anthraquinone glycosides, and saponin glycosides were absent. Carbohydrates, proteins, and fats were consistently present. No presence of *E.coli*, *S.aureus*, *P.aeruginosa*, and *S.abony* was detected during the six month storage. Total bacterial count was 03 cfu/gm, 05 cfu/gm, and 07 cfu/gm, and total fungal count was 01 cfu/gm, 03 cfu/gm, and 05 cfu/gm at 0, 3, and 6 months, respectively.

A well-designed stability protocol includes information on batch selection, sample attributes, analytical procedures, acceptance criteria, storage conditions, testing frequency, sampling plan, container closure and various stability testing methods. In Ayurvedic texts, "*Saviryata avadhi*" shows to the shelf-life during which the potency of a drug remains above a certain threshold, beyond which it may partially lose potency but not entirely, provided proper storage conditions are maintained. This study found that *Ashtaguna manda* remained stable under accelerated conditions for up to six months, with minimal changes in physicochemical and phytochemical parameters, indicating high stability and shelf-life.

A Sensory Evaluation questionnaire was used to determine the sensory characteristics of the RTE food. Consumer sensory testing was necessary to evaluate the level of liking for *Ashtaguna manda* RTE Food. Consumers' attitudes play an important role in purchasing RTE food products. This study contributes to creating a monograph for the RTE *Ashtaguna manda* therapeutic formulation in the Indian Formulary. The packaging also offered ready-to-eat and portable solutions, meeting the needs of contemporary consumers with hectic schedules.

By giving essential information on ingredients, nutritional value, allergens, and size of serving, food labels provide as an educational link between consumer and food products, empowering them to make more informed and health-conscious decisions. As consumers become more conscious of sustainability, nutrition, and health, food labelling becomes more crucial in encouraging responsible eating and a better-informed food business.

Nutritional values of *Ashtaguna manda* in powder form (sachet) showed better results in micronutrient values due to preserving them in their natural states. Micronutrients such as magnesium, potassium, phosphorus, and manganese are sensitive to heat and may be lost during processing in the liquid form. Thus, the *Ashtaguna manda* RTE therapeutic formulation in powder form is superior to the liquid form, making it a good Ready-To-Eat Therapeutic Food.

In the case of *Ashtaguna manda*, both time and temperature significantly impact its quality. Establishing the shelf life as well as ideal storage settings for pharmaceuticals requires stability research. In real-time and accelerated tests for stability are the two main techniques utilised for stability testing. In real-time testing, a product is kept under suggested settings until it stops meeting requirements. In order to predict deterioration at typical storage settings accelerated testing which is appropriate for stable goods with a lengthy shelf-life involves maintaining the product under heightened stress conditions, like higher temperatures, moisture, and pH levels. Therapeutic food depends on its ingredients and processing methods. *Ashtaguna manda's* extended shelf life can be attributed to its high quality production, absence of water activity, low moisture content, optimal nutrient content, favourable pH, and salt and oxidation potential. Additionally, the processing methods and packaging materials used play a crucial role in extending its shelf life.

In its powdered form, *Ashtaguna manda* offers additional benefits such as improved palatability, ease of preparation, instant use with warm water, and a longer shelf-life due to lower moisture content and the presence of nutrients like carbohydrates, proteins and fats. Standardizing Ayurveda-based therapeutic diet preparation is essential for assessing the quality of the food and the *prakshepaka* (adjuvants) *aushadhis* (drugs) used in these preparations, focusing on the concentration of their active principles. Ensuring quality in therapeutic diet preparations involves strict quality control of the ingredients and adherence to good manufacturing practices.

Conclusion:

The present study demonstrates that the Ready-To-Eat (RTE) Therapeutic Food, *Ashtaguna Manda*, remained stable for 6 months, showing very favourable results in stability studies. The demand for RTE Therapeutic Food products has increased significantly, especially in modern times where people's spare time and time spent in the kitchen are limited. An accelerated stability study (Temperature: 40 °C ± 2, Relative

Humidity (RH): $75\% \pm 5$) was conducted following ICH guideline Q1A (R2). Changes in organoleptic parameters, physico-chemical parameters, and microbial load were observed over 6 months at intervals of 0, 3, and 6 months. The investigation indicates that the RTE food remained suitable under accelerated conditions for beyond 6 months of storage. No significant changes were noted for *Ashtaguna Manda* RTE Therapeutic Food, and it nearly met the W.H.O protocol limits when stored for 6 months. *Ashtaguna Manda* RTE Therapeutic Food was generally well accepted by most healthy panellists. The results from this study can serve as a reference for establishing pharmacopeia standards for *Ashtaguna Manda*, highlighting the necessity of stability studies for assessing product quality.

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