PHYSICO-CHEMICAL EVALUATION AND DEVELOPMENT OF *AMLAKYADI CHOORNA*(COMPOUND HERBAL POWDER) INTO DISPERSABLE TABLETS"

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Abstract

Ayurveda is a ancient medical science practicing since ages. It has many branches based on the site and mode of therapeutic activities. The greatest emphasis is given to the complete knowledge of drugs including identification, procurement, processing, preparation and application under separate branch called *Bhaishajya Kalpana* (Ayurvedic Pharmaceutical science).

Amalakyadi Churna(Compound herbal powder) is one of the classically explained compound formulation. It is prepared by mixing *Amlakyadi Churna*(Indian gooseberry fruit powder*),*(Embilica Officinalis),*Chitraka*(Plumbago Zyelanica*), Haritaki*(Terminalia chebula), *Pippali (*Piper longum), and *Saindhava Lavana*(Rock salt) in equal combination used mainly in Gastro intestinal disorders and fever. The description *regarding Amalakyadi Churna* is available in *Sharangdhara Samhita*(Classical Ayurvedic Textbook).

Key words*: Amlakhyadi churna*; Ayurveda; Pharmacutico-Analytical Standardization, Dispersible tablet.

1.Introduction

The fundamental preparations of Bhaishajya Kalpana are Panchavidha Kashaya Kalpanas(five basic Pharmaceutical Preparations). They are *Swarasa*(Freshly Extracted Herbal juice), *Kalka*(Herbal Paste), *Kwatha*(Herbal Decoction), *Hima* and *Phanta*(Cold and Hot Infusions), which are *Uttarottara Laghu*(Light for digestion in succeeding order) in nature[1]. These are therapeutically potent formulations used for different ailments. But it found difficult to adopt these formulations for longer duration. They are effective when prepared freshly. May be to overcome these disadvantages some other dosages which are equally potent are prepared and used. Dosage form is defined as physical form of a chemical compound used as drug or medication intended for administration or

consumption. *Amalakyadi Churna* is one of the classically explained compound formulation. It is prepared by mixing *Amlakyadi Churna*(Indian gooseberry fruit powder*)*,(Embilica Officinalis),*Chitraka*(Plumbago Zyelanica*), Haritaki*(Terminalia chebula), *Pippali (*Piper longum), and *Saindhava Lavana*(Rock salt) in equal combination used mainly in Gastro intestinal disorders and fever. The description regarding *Amalakyadi Churna* is not available in *Bruhatrayi and Laghutrayi*(The three major and miner textbooks of Ayurveda), But later scholars have used this preparation extensively in the management of digestive impairments. It helps to normalize the *Agni*(Digestive capacity) as it is having *Deepana*, *Pachana* and *Anulomana* action. It is indicated in the management of *Jwara*(Fever), *Agnimandya*(reduced digestive capacity), *Ajeerna*(Indigestion), Adhmana(Distention of abdomen) [2]. In the dose of one *Karsh* (12gms)(Ayurvedic Dose) along with *Dadhi*(curd), *Jala*(Water) or *Takra*(Buttermilk), as these might help to increasing the bioavailability of the drug or to maintain the pH of the administered formulation.

2. Materials and Methods

Amalaki(Embilica Officinalis), *Chitraka*(Plumbago Zyelanica*)*, *Haritak*(Terminalia chebula), *Pippali (*Piper longum), *Saindhava Lavana*(Rock salt)

Properties of contains of Amlakhyadhi churna[3,4,5,6,7,8,9,10]

Dravya name (Drug Name)	**Rasa (Taste)**	**Guna (Qualities)**	**Virya (Potency)**	**Vipaka**	**Karma (Actions)**
Amlaki	Pacnchrasa lavanvarjit	Lagu, sara	sheet	madhur	Vrushya, rasayan
Haritaki	Pacnchrasa lavanvarjit	Laghu, ruksha	ushna	madhur	Deepana, tridoshagna
Chitrakamoola	katu	Laghu, ruksha	ushna	katu	Vatakaphahar, Grahi
Pippali	katu	ruksha	ushna	ushna	Varnya, rasayan
Saindhav lavan	lavana	ushan	sheeta	sheeta	Rechana deepan

Preparation of *Amalakyadi Churna*:-

- All the drugs as per specified quantity were taken in a mortar.
- The powders were mixed thoroughly by pestle till it becomes homogeneous mixture.

Pharmacutical Preparation of Dispersable tablet of *Amalakyadi Churna*[11,12]

1) The prepared *Amlakyadhi churna* is subjected for Dispersible tablet by wet granulations method by using aqueous solution.
2) Known quality of *churna* is weighed.
3) Churna and other excipients are taken in a mortar and converted into a dough mass by adding required quantity of 10% PVP in ethanol as a granulating agent.
4) The dough mass is passed through sieve number 10, the pallets obtained are dried in a traydrier at 60 degree c for 15 minutes.
5) The dry granules are passed through sieve number 44, super imposed on sieve number 22 on a clean filter paper.
6) The granules retained on sieve number 44 are collected and to this 10% of fines, the remaining quantity of disintegrating agent and suitable quantity of lubricant is added.
7) Mixed thoroughly and compressed into tablets.

PHYSICO-CHEMICAL ANALYSIS:-

3.Observation and Result:

Physico-Chemical analysis of *Amalakyadi Churna*:

Sl.No	Tests	Amalakyadi Churna
1	Foreign	Nil
2	Ash Value	15.8w/w
3	Acid Insoluble ash	3.41w/w
4	Water Soluble Ash	5.20w/w
5	Alcohol Extract	23.27%
6	Aqueous Extract	83.18%
7	pH	4.04

Analysis of Dispersable Tablets of Amalakyadi Churna:

Sl.No	Tests	Results
1	Hardness	1.2
2	Friability	0.787
3	Wt. Variation	+/-2%
4	In vitro Disintegration test	70 sec

Comparative Analysis of total Alkaloids:

Sampales	Alkaloid in %
Amalaki	0.547
Chitraka	1.231
Haritaki	0.457
Pippali	1.336
Amalakyadi Churna	1.639
Dispersible tablet of Amalakyadi Churna	0.914

DEVELOPMENT OF DISPERSABLE AMALAKHYADI TABLET:

AMALAKHYADI CHURNA

MIXING THE EXCIPIENTS

DOUGH MASS

DOUGH MASS PASSED THROUGH SIEVE 10

TRAY DRIER

PELLETS

GRANULES ON SIEVE No 44

FINES

GRANULAR MIXTURE

TABLET COMPRESSION MACHINE

DISPERSABLE AMALAKHYADI TABLET

4. Discussion

In *Bhaishajya Kalpana* five basic formulations are described. They *are Swarasa, Kalka, Kwatha, Hima and Phanta* which are *Uttarotthara Laghu* in nature. These are therapeutically potent formulations used for different ailments. They are effective when prepared freshly. But it is difficult to adopt these formulations for longer duration due to deterioration. May be to overcome these disadvantages some other dosage forms which are equally potent are prepared by the herbal manufacturers and used in the treatment. Among them *Churna Kalpana*(powder dosage form) is one of the dosage form known as *Upakalpana*(Secondary Preparation) of *Kalka Kalpana*. *In Kalka Kalpana* drugs are either wet or dry form which are pounded and prepared into fine paste. But in case of *Churna Kalpana* completely dried drugs are pounded, triturated into fine state of division. According to classical reference the *Churna* preparations will not lose their potency up to two months,(AYUSH gazette up to 2yrs). *Churnas* can be prepared by using single ingredient or more ingredients which is called compound powder.

Amalakyadi Churna:

Amalakyadi Churna is one of the classically explained compound formulation. It is prepared by mixing *Amalaki Churna, Chitraka mula Churna, Haritaki Churna, Pippali Churna* and *Saindhava*

Lavana in equal combination used mainly in Gastro intestinal disorders. Its reference found mainly in *Sharangdhara Samhita Madhyama Khanda Churna Kalpana*.

In the present study, classical *Amalakyadi Churna* was selected to modify its dosage form into dispersible tablet.

Rationality of conversion:

- With respect to shelf life and stability, *Churna* has less stability in comparison with tablets as powder gets deteriorated very easily by microbes and moisture.
- Dose variation can be seen in *Churna* as the measuring device varies with respect to individuals. Although, *Churna* has more area of getting exposure while digestion but very difficult in carrying and dispensing while travelling.
- However, many elderly persons will have difficulties in taking conventional compressed tables because of dysphasia and hand tremors. Swallowing problems are also common in children because of their under developed muscular and nervous system.[13]
- It is essential to change the formulation which is convenient to the consumers without violating the basic concepts of Ayurveda.
- The present study deals with the pharmaceutical development of *Amalakyadi Churna* in the form of dispersible tablet, by this one can increase the shelf life of the drug and can be administered easily to any age group and preserved safely.

Pharmaceutical aspect:

Procedure:

During prepartion of *Amalakyadi Churna*, size reduction of completely dried *Amalaki*, *Chitraka*, *Haritaki* (devoid of seeds), and *Pippali* were carried out by using pulverizer and then passed through sifter with sieve No.120 to obtain uniform sized *Churna*. The *Saindhava Lavana* was pounded in *a Khalwa Yantra* separately and passed through sifter with sieve No.120. The powdered *Amalaki, Chitraka, Haritaki, Pippali* and *Saindhava Lavana* are mixed in equal quantity and homogeneous powder mixture is prepared. To obtain the proper *Churna*, herbs should be completely dried in nature otherwise it is not possible to prepare the *Churna*. *Lavana* should be free from moisture before pounding. For proper absorption, uniform sized *Churna* is necessary. It is possible only when it is filtered through sieve.

Equipment:

In olden days stony *Khalva Yantra* was used for pounding and triturating the dried herbs, later pulverizer and different sieves was used for the preparation of powders. Usage of pulverizer and sieves was found convenient, safe for the preparation of powders without altering the therapeutic qualities.

Analytical part:

Herbal ingredients of *Amalakyadi Churna* was analyzed for physico-chemical and phyto chemical parameters as all the parameters were under the API standards. It is suggested that the utilized raw materials were genuine.

Analysis of dispersible Tablet:

Hardness is 1.2Kg/cm 2 and friability is 0.787 % indicating sufficient mechanical strength during convenient transportation without any breakage of the tablets. The in vitro disintegration time for the tablet is 70 seconds. Decrease in the disintegration time is achieved due to the addition of super disintegrating agent CCS in the tablet formulation. The weight variation is (± 2%), by this proper fixation of therapeutic dose can be achieved.

Flame photometry:

Flame photometry of *Saindhava Lavana* showed presence of Sodium 40.60%, potassium 0.19% and were under the standard limits. *Amalakyadi Churna* contains sodium 17.06% and potassium 0.04% whereas dispersible tablets of *Amalakyadi churna*.

TLC Analysis:

TLC of dispersible tablets of *Amalakyadi Churna* was developed in Water, Ethyl acetate and Toluene (5:3:1 v/v) solvent system. Under 254 nm it showed 5 spots with Rf 0.03, 0.13, o.35, 0.42 and 0.97. Under 366 nm it showed 8 spots with Rf value 0.03, 0.13, o.35, 0.6, 0.71, 0.83, 0.9 and 0.97.

5.Conclusion

The pharmaceutical manufacture of dispersible tablets from *Amalakyadi Churna* was carried out conveniently by adding excipients and binding agents. Conversion of *Amalakyadi Churna* into dispersible Tablets has shown few changes in chemical contents of the original formulation quantitatively. Quality control test for tablets was carried out and found satisfactory. Adaptation of newer pharmaceutical technologies in the manufacturing of Ayurvedic formulations is need of hour to meet the trends and compliance of today's society. It can be produced commercially in large quantity in a cost effective methods. So changing the form of Ayurvedic formulations without deviating from Ayurvedic principles of Pharmaceutics to be encouraged to make herbal formulation.

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