Research Journal of Medical Sciences
[E-ISSN: 3078-2481 | P-ISSN: 3078-2473]
Available on: https://rjmsonline.com/
Volume: 01 | Issue: 01, Jul-Dec, 2019

Research Article *Open Access*

BIOLOGICAL IMPORTANCE OF AYURVEDIC CHURNAS: A REVIEW

Shreya Maddesiya[*1], Navneet Kumar Verma[2], Uma Srivastava[3]

[1]Institute of Technology And Management, Gida, Gorakhpur, UP, India-273209
[2] Faculty of Pharmacy, Buddha Institute of Pharmacy, GIDA, Gorakhpur, UP, India-273209
[3] Department of Mathematics & Statistics, DDU Gorakhpur University, Gorakhpur, UP, India-273009
Email: shreyamaddesiya15@gmail.com

Corresponding Author

Shreya Maddesiya
Institute of Technology And Management, Gida, Gorakhpur, UP, India-273209
Email: office.rjmsonline@gmail.com

Source of support: Nil.
Conflict of interest: None

Received: 14-10-2019
Accepted: 28-11-2019
Available online: 25-12-2019

Abstract

The most basic and readily made type of Ayurvedic medication is called Churna. The churna that we are going to make should first be referenced to an acknowledged Ayurvedic text or the Indian Ayurvedic Formulary (AFI). With the invention of modern machinery, churna preparation has become a fairly simple task. Disintegrators wash, dry, and powder all of the necessary herbs at once. This procedure also makes use of mechanical shifters. Many herbal remedies that contain churnas are available on the market for a variety of illnesses, including both acute and chronic disorders. In order to assess the churnas in the regular quality concern, we tried to investigate general preparation and pharmacopoeial standards in this evaluation.

Disintegrators cleaned, dried, and ground everything into a powder. This procedure also makes use of mechanical shifters. Many herbal remedies that contain churnas are available on the market for a variety of illnesses, including both acute and chronic disorders. In order to assess the churnas in the regular quality concern, we tried to investigate general preparation and pharmacopoeial standards in this evaluation.

Key Words: *Churna Preparation; Ayurvedic Standards; Quality Assessment.*

INTRODUCTION

Ayurveda is considered by many scholars to be the oldest healing science. In Sanskrit, Ayurveda means “The science of life”. Ayurvedic knowledge originated in India more than 5000 years ago and is often called the “Mother of All Healing”.[1-2] Churna is defined as a fine powder of drug or drugs in Ayurvedic system of medicine. Drugs mentioned in patha, are cleaned properly, driedthoroughly, pulverised and then sieved. The churna is free flowing and retains its potency for one year, if preserved in airtight containers. Triphala churna, Trikatu churna, Drakeshadi churna and Sudharsana churna are some of examples. Churna formulations are similar to powder formulations in Allopathic system of medicine. Indigestion is a common ailment affecting the general population and in allopathy system antacids are commonly prescribed. Since the usage ofsuch aluminium containing antacids cause deleterious effects like Alzheimer’s disease upon longterm usage, we explored an alternative and safe remedy for indigestion. Hence we prepared a churna with natural ingredients commonly

used by mankind for culinary purposes. Thus the present study examined the favourable influence of four spices formulated into churna said to have digestive property. The common ingredients of these churna were Ginger (Zingiber officinale), Ajowan (Trachyspermum ammi), Cinnamon (Cinnamomum zeylanicum) and Fennel (Foeniculum vulgare). The formulated churna derived from above said drugs is reported to havea wide range of biological activity. Ginger contains aromatic principle like Zingiberine and bisaboline while pungent principles are gingerols and shogaols. Other components are nerol, geraniol, d-camphor, β-Phellandrene, linalool, α-farnesene, [3] Shagoal, [4] and also diarylheptanoids such as gingerone A&B. This is used in the treatment of flatulence, colic, indigestion, vomiting, constipation. It also maintains the tonicity of intestine muscle [5-6]. Ajowan was found to contain essential oil that contains 50% thymol. This is used in traditional medicine for the treatment of indigestion and also as antispasmodic [7]. Cinnamon contains cinnamaldehyde, which is a phenylpropene derivative [8]. It was found to possess antibacterial property and is mostly used as carminative. Fennel contains anethole and fenchone. This is mainly used as a carminative [9-12].

DEFINITION OF CHURNA:

Churna is defined as totally dried raw material which is powdered very minutely to make their small size and again filtered through cloth's grid and obtained fine powder is called as "Churna".A blend of several herbs and spices make up the powdered mixture known as Churna. Dependingon its intention in medicinal, beauty, or culinary use, its recipe varies. Common Churna ingredients include cinnamon, fennel, dried ground ginger, coriander and turmeric. In the Ayurvedic diet, Churna supplements are relied upon for many dietary and nutritional uses. The herbal mixture is thought to purify the blood and improve digestion when regularly used. Many Ayurvedic practitioners also use the blend to help prevent or treat inflammation. The immune system may be improved by ingesting these herbs as well. Several Ayurvedic recipes call for the remedy. Various herbal and fruit extracts are sometimes combined with the herbal mixture and sugar to create cough syrup elixirs known as sitopaladi Churna. Such solutions have also been known to be helpful in treating conditions such as indigestion, body weakness and chest congestion. Some people use the medicine for allergies as well. Liver detoxification regimens sometimes call for this Ayurvedic mixture. Available in tea, capsule, tablet, liquid, or powder form, it is also commonly used as a laxative. Many practitioners also hail the spice blend as a longevity tonic, using it for general brain and heart health. It has been known to help remedy for high blood pressure. [13-16]

Fig1: Churna Powder

SCIENTIFIC APPROACH OF AYURVEDA AND CHURNAS

Ayurvedic principles show that everyone has a particular personality type as shown by the makeup of their doshas, or inner life energies. Your prakriti is your make up when you were bornand vikruti is what they are now as a result of life's experiences and stresses and imbalances of other elemental influences. In order to correct these imbalances, one can use churnas, or Ayurvedic spice powders that are made up of blends of spices. Ayurvedic churnas combine all six of the Ayurvedic tastes: sweet, sour, salty, pungent, bitter and astringent.

The spices included in Ayurvedic churnas all have strong medicinal properties of their own. Ayurveda has long been touting the health benefits of these herbs. Ground ginger, for example, provides a pungent flavor but also calms the stomach and

promotes good digestion. Turmeric contains curcumin, which is thought to reduce cholesterol, provide a boost to the immune system, aid in liver detoxification and improve the body's response to allergens. It is a potent antioxidant, which means it helps the body fight off dangerous molecules known as free radicals,which contribute to your risk for heart disease and cancer. Cumin is also known to help the body in its detoxification efforts as well as make digestion smoother. Ayurvedic churnas are thus not only great at enhancing flavor, they also carry a number of health benefits of their own. Since they taste great, this makes it easy to add a healthy kick to nearly every meal you eat.[17-23]

BALANCING THE THREE PRINCIPLE ENERGIES OF THE BODY:

Ayurveda identifies three basic types of energy or functional principles that are present in everyone and everything. Since there are no single word in English that convey these concepts, we use the original Sanskrit words Vata, Pitta, Kapha. These principles can be related to basic principles of the body. Energy is required to create movement so that fluids and nutrients get to the cells, enabling the body to function. Energy is also required to metabolize the nutrients in the cell. Vata is the energy of movement; pitta is the energy of digestion or metabolism; Kapha is theenergy of lubrication and structure.

Vata

Is the subtle energy associated with movement composed of space and air. It governs breathing, blinking,muscle and tissue movement, pulsation of heart. In balance, Vata promotes creativity and flexibility. Out of balance, Vata promotes fear and anxiety.

1. **Vata Churna**

a. Cumin
b. Turmeric
c. Ginger
d. Fenugreek
e. Sea Salt
f. Organic Sugar

Used in soups, while cooking vegetables and on rice. Good for grounding and calming.

2. **General Guidelines for Balancing Vata**

a. Keep warm
b. Keep calm
c. Avoid cold, frozen and raw food
d. Avoid extreme cold
e. Eat warm and spicy food
f. Keep a regular routine
g. Get plenty of rest.

Pitta Expresses as the Body's Metabolic System

It was made up of fire and water and fire. It governs digestion, absorption, assimilation,nutrition, metabolism and body temperature. In balance, Pitta promotes understanding and intelligence. Pitta arouses anger, hatred and jealousy.

1. **Pitta Churna**

a. Coriander
b. Fennel
c. Cumin
d. Cardamom
e. Ginger
f. Turmeric

Use on cooked vegetables before serving, soups and sprinkle on cooked hot rice with ghee. Cooling and calming.

2. **General Guide Lines for Balancing Pitta**

a. Avoid excessive heat
b. Avoid excessive oil
c. Avoid excessive steam
d. Limit salt intake
e. Eat cooling and non-spicy food
f. Exercise during the cooler part of the body

Kapha

Kapha is the energy that forms the body's structure bones, muscles, tendonsa nd provides the glue that holds the cells together. Kapha supplies the water for all the body parts and system. In balance, Kapha is expressed as love, calmness and forgiveness. Out of balance it leads to attachment, greed and anvy.[24-27]

1. **Kapha Churna**

a. Ginger
b. Turmeric
c. Cinnamon
d. Cumin
e. Black Pepper
f. Cardamom.

2. **General Guidelines for Balancing Kapha**

a. Get plenty of exercise
b. Avoid heavy food
c. Keep active
d. Avoid dairy
e. Avoid ice food or drinks
f. Eat light and dry food
g. No day time naps.

Quality Aspects of Churnas:

There are different quality parameters to be considered for the evaluation of Ayurvedic Churnas, they are as follows:[28-31]

1. **Determination of Moisture Content (Loss on Drying):**

Procedure set forth here determines the amount of volatile matter (i.e., water drying off from thedrug). For substances appearing to contain water as the only volatile constituent, the procedure given below, is appropriately used. Place about 10 g of drug (without preliminary drying) after accurately weighing (accurately weighed to within 0.01 g) it in a tared evaporating dish. For example, for underground or unpowderd drug, prepare about 10 g of the sample by cutting shredding so that the parts are about 3 mm in thickness. Seeds and fruits, smaller than 3 mm should be cracked. Avoid the use of high speed mills in preparing the samples and exercise care that no appreciable amount of moisture is lost during preparation and that the portion taken is representative of the official sample. After placing the above said amount of the drug in the taredevaporating dish dry at 105ι for 5 hours and weigh. Continue the drying and weighing at one hour interval until difference between two successive weighing corresponds to not more than
0.25 per cent. Constant weight is reached when two consecutive weighing after drying for 30 minutes and cooling for 30 minutes in a desiccator, show not more than 0.01 g difference.

$$\text{Formula:} \quad \frac{(w2-w3)*100}{(w2-w1)}$$

Where,

W1= weight of crucible; W2= weight of crucible + weight of sample, W3= weight of crucible +weight of dried content.

2. **pH:**

pH of the churna was determined using pH meter by dispersing 1% w/v and 10% w/v churna inwater.

3. **Crude Fibre:**

Content 2g of the churna wad added with 50ml of 10% nitric acid. This was boiled and filtered. The retains was washed with hot water and added with 50ml of 2.5% v/v sodium hydroxide solution. This was again filtered, washed with hot water and the residue was transferred into a crucible. The weight of the residue was taken for determining the crude fibre present in the churna.

4. **Ash Value:**

Total Ash Value

The total ash content was determined by taking 2g of churna into a preweighed and tarred crucible and incinerated at a temperature not exceeding 450°C, cooled and weighed. The difference between initial and final gives the total ash value.[32]

Acid Insoluble Ash

The residue of ash obtained in total ash was added with 25ml of dilute HCl and boiled for 5mins.This was filtered using ashless filter paper and ignited again to determine the acid insoluble ash.

Water Soluble Ash Value

The residue of the total ash was added with 25ml of water in the place of dil.HCl and the procedure was followed the similar way.

5. Extractive Value:

Alcohol Soluble Extractive Value

5g of churna was added with 100ml of alcohol and kept for 24hrs, occasionally shaking and left aside after the first 6hrs. It was then filtered. The filtrate was evaporated until constant weight was obtained. The difference in weight gives alcohol soluble extractive value.[33]

Water Soluble Extractive Value

5g of churna was added with 100ml of chloroform water and kept for 24hrs and the similar procedure was followed like alcohol soluble extractive value.[34]

6. Macroscopical Evaluation: [35-42]

Macroscopic study was carried out by color, odour and taste for samples in the form of Churna.

7. Determination of Powder Flow Property:

Physical properties of lab and market formulations were determined by the parameters described below:

[A] Bulk and Tap density

Both bulk density (BD) and tapped density (TD) was determined as per USP. A quantity of 10 gm of powder blend was introduced in to 25 ml measuring cylinder. After that the initial volume was noted and the cylinder was allowed to fall under its own weight on to a hard surface from the height of 2.5 cm at second intervals. Tapping was continued until no further change in volume was noted. BD and TD were calculated using the following equations.

BD = Weight of the powder blend/Untapped Volume of the packingTD = Weight of the powder blend/Tapped Volume of the packing

[B] Carr's Index (Compressibility index)

The Compressibility Index of the powder blend was determined by Carr's compressibility index.The formula for Carr's Index is as below:

Carr's Index (%) = [(TD-BD) ×100]/BD

[C] Housner's ratio

The formula for Housner's ratio is as below:

Housner's ratio = Tape density/Bulk density

[D] Angle of Repose

The angle of repose of powder blend was determined by the funnel method. The accurately weight powder blend were taken in the funnel. The height of the funnel was adjusted in such a way the tip of the funnel just touched the apex of the powder blend. The powder blend was allowed to flow through the funnel freely on to the surface. The diameter of the powder cone wasmeasured and angle of repose was calculated using the following equation.

Tan q = h/r, Where, h and r are the height and radius of the powder cone.

8. Microscopical examination:

Powder characteristics of the drug were studied under the microscope. The stained and unstainedslide was prepared and the characters were examined and photographed using digital CCD camera.

Procedure: Powder was boiled with clarifying reagent chloral hydrate for few minutes. After boiling, the powder was mounted on the slide with lactophenol 50% glycerin for the unstained slide preparation and covered with the cover slip. While for the stained slide preparation, powderwas stained with the phloroglucinol and Conc HCl and mounts with 50% glycerin and covered with the cover slip. The stained slide was also prepared using iodine solution for starch grains. The slides were examined under the microscope.

9. Preliminary Phytochemical Studies:

Introduction: Plants may be considered as biosynthetic food laboratories in which various compounds are synthesized such as carbohydrates, proteins, lipids, flavonoids, alkaloids, volatileoils, tannins etc that exerts physiological effects. The medicinal value of any drug depends on thenature of chemical constituents present in it, which is referred as active constituent. In order to detection of active constituents plants are needed to be subject to phytochemical screening according to the standard procedures.

10. Thin-Layer Chromatography (TLC):

Thin-layer chromatography is a technique in which a solute undergoes distribution between two phases, stationary phase acting through adsorption and a mobile phase in the form of a liquid. The adsorbent is a relatively thin, uniform layer of dry finely powdered material applied to a glass, plastic or metal sheet or plate. Separation may also be achieved on the basis of partition or a combination of partition and adsorption. Identification can be effected by observation of spots of identical Rf value and about equal magnitude obtained, respectively, with an unknown and a reference sample chromatographed on the same plate. A visual comparison of the size and intensity of the spots usually serves for semi-quantitative estimation.

a. Apparatus

i. Flat glass plates of appropriate dimensions which allow the application at specified points of the necessary quantities of the solution being examined and appropriate reference solutions and which allow accommodation of the specified migration path-length. The plates are prepared as described below; alternatively, commercially prepared plates may be used.

ii. An aligning tray or a flat surface on which the plates can be aligned and rested when the coating substance is applied.

iii. The adsorbent or coating substance consisting of finely divided adsorbent materials, normally 5 µm to 40 µm in diameter is suitable for chromatography. It can be applied directly to the plate or can be bonded to the plate by means of Plaster of Paris (Hydrated Calcium Sulphate) or with any other suitable binders. The adsorbent may contain fluorescing material to help in visualizing spots that absorb ultra-violet light.

iv. A spreader which, when moved over the glass plate, will apply a uniform layer of adsorbent of desired thickness over the entire surface of the plate.

v. A storage rack to support the plates during drying and transportation.

vi. A developing chamber that can accommodate one or more plates and can be properly closed and sealed. The chamber is fitted with a plate support rack that supports the plates, back to back, with lid of the chamber in place.

vii. Graduated micro-pipettes capable of delivering microliter quantities say 10 µl and less.

viii. A reagent sprayer that will emit a fine spray and will not itself be attacked by the reagent.

ix. An ultra-violet light, suitable for observation at short (254 nm) and long (365 nm) ultra-violetwavelengths.

b. Preparation of Plates

Unless otherwise specified in the monograph, the plates are prepared in the following manner. Prepare a suspension of the coating substance in accordance with the instructions of the supplier and, using the spreading device designed for the purpose, spread a uniform layer of the suspension, 0.25 to 0.30 mm thick, on a flat glass plate 20 cm long. Allow the coated plates to dry in air, heat at 100ι to 105ι for at least 1 hour (except in the case of plates prepared with cellulose when heating for 10 minutes is normally sufficient) and allowed to cool, protected frommoisture. Store the plates protected from moisture and use within 3 days of preparation. At the time of use, dry the plates again, if necessary, as prescribed in the monographs.

11. Test for Heavy Metals:

a. Limit Test for Lead

The following method is based on the extraction of lead by solutions of dithizone. All reagents used for the test should have as low a content of lead as practicable. All reagent solutions should be stored in containers of borosilicate glass. Glassware should be rinsed thoroughly with warm dilute nitric acid, followed by water.

➢ **Special Reagents**

- Ammonia-cyanide solution Sp. – Dissolve 2 g of potassium cyanide in 15 ml of strong ammoniasolution and dilute with water to 100 ml.
- Ammonium citrate solution Sp. – Dissolve 40 g of citric acid in 90 ml water.
- Add two drops of phenol red solution then add slowly strong ammonia solution until the solutionacquires a reddish colour. Remove any lead present by extracting the solution with 20 ml quantities of dithizone extraction solution until the dithizone solution retains its orange-green colour.

- Dilute standard lead solution – Dilute 10.0 ml of standard lead solution with sufficient 1 per cent v/v solution of nitric acid to produce 100.0 ml. Each ml of this solution contains 1 µg of lead per ml.
- Dithizone extraction solution – Dissolve 30 mg of diphenylthiocarbazone in 1000 ml of chloroform and add 5 ml of alcohol. Store the solution in a refrigerator. Before use, shake a suitable volume of the solution with about half its volume of 1 per cent v/v solution of nitric acidand discard the acid.
- Hydroxylamine hydrochloride solution Sp. – Dissolve 20 g of hydroxylamine hydrochloride in sufficient water to produce about 65 ml. Transfer to separator, add five drops of thymol blue solution, add strong ammonia solution until the solution becomes yellow. Add 10 ml of a 4 per cent w/v solution of sodium diethyl dithiocarbamate and allow to stand for five minutes. Extract with successive quantities, each of 10 ml, of chloroform until a 5 ml portion of the extract does not assume a yellow colour when shaken with dilute copper sulphate solution. Add dilute hydrochloric acid until the solution is pink and then dilute with sufficient water to produce 100 ml.
- Potassium cyanide solution Sp. – Dissolve 50 g of potassium cyanide in sufficient water toproduce 100 ml. Remove the lead from this solution by extraction with successive quantities, each of 20 ml of dithizone extraction solution until the dithizone solution retains its orange-greencolour. Extract any dithizone remaining in the cyanide solution by shaking with chloroform.Dilute this cyanide solution with sufficient water to produce a solution containing 10 g ofpotassium cyanide in each 100 ml.
- Standard dithizone solution – Dissolve 10 ml of diphenylthiocarbazone in 1000 ml of chloroform. Store the solution in a glass-stoppered, lead-free bottle, protected from light and in a refrigerator.
- Citrate-cyanide wash solution – To 50 ml of water add 50 ml of ammonium citrate solution Sp. and 4 ml of potassium cyanide solution Sp., mix and adjust the pH, if necessary, with strong ammonia solution to 9.0.
- Buffer solution pH 2.5 – To 25.0 ml of 0.2 M potassium hydrogen phthalate add 37.0 ml of 0.1 Nhydrochloric acid and dilute with sufficient water to produce 100.0 ml.
- Dithizone-carbon tetrachloride solution –Dissolve 10 mg of Diphenyl thiocarbazone in 1000 ml of carbon tetrachloride. Prepare this solution fresh for each determination.
- pH 2.5 wash solution – To 500 ml of a 1 per cent v/v nitric acid add strong ammonia solution until the pH of the mixture is 2.5, then add 10 ml of buffer solution pH 2.5 and mix.
- Ammonia-cyanide wash solution – To 35 ml of pH 2.5 wash solution add 4 ml of ammonia-cyanide solution Sp. and mix.

➢ **Method**

Transfer the volume of the prepared sample directed in the monograph to a separator and unless otherwise directed in monograph, adds 6 ml of ammonium citrate solution Sp. and 2 ml hydroxylamine hydrochloride solution Sp., (For the determination of lead in iron salts use 10 ml of ammonium citrate solution Sp.). Add two drops ofphenol red solution and make the solution just alkaline (red in colour) by the addition of strong ammonia solution. Cool the solution if necessary and add 2 ml of potassium cyanide solution Sp. Immediately extract the solution with several quantities each of 5 ml, of dithizone extraction solution, draining off each extract into another separating funnel, until the dithizone extraction solution retains its green colour. Shake the combine dithizone solutions for 30 seconds with 30 ml of a 1 per cent w/v solution of nitric acid and discard the chloroform layer. Add to the solution exactly 5 ml of standard dithizone solution and 4 ml of ammonia-cyanide solution Sp. and shake for 30 seconds; the colour of the chloroform layer is of no deeper shade of violet than that of a control made with a volume of dilute standard lead solution equivalent to the amount of lead permitted in the sample under examination.

GENERAL METHOD OF PREPARATION:

The ingredients mentioned in formulations are taken and clean then dried properly. After drying the entire ingredient are powdered separately then sieved. In the formulation if the ingredient is more than one then each one of the individual powder is weighted separately and well mixed together.

PARTICLE SIZE:

The particle size of powders is standardized according to the USP descriptive terms, such as, very fine, fine, moderately coarse, coarse and very coarse. The definition of the terms for powders of vegetable is given in following table.[43]

Table 1:

Definition of powders of herbaldrug	Maximum Diameter	Requirments
Very Fine	≤180µm(≤0.180mm)	Passes through a No.80sieve

Fine	≤250µm(≤0.250mm)	Passes through a No.60sieve
Moderately Coarse	≤425µm(≤0.425mm)	Passes through a No.40sieve
Coarse	≤850µm(≤0.850mm)	Passes through a No.20sieve
Very Coarse	≤2360µm(≤2.36mm)	Passes through a No.8sieve

IMPORTANT CLASSICAL FORMULATIONS:

Sl.No	Name of Formulation	Reference	Rogadhikara	Matra/Anupana
1.	*Ajamodadi Churna[44]*	*SarangadharaSamhita*	*Sula, Grudhrasi, Amavata, Katiruja, Sandhipida,etc.*	*Matra:3-6gm Anupana:Usnodaka*
2.	*AgnimukhaChurna[47]*	*Yogaratnakara*	*Udavarta, Ajeerna, Pliharoga, Udararoga,etc.*	*Matra:3-6gm Anupana:Usnodaka*
3.	*Amrutadi Churna[48]*	*Astanga Hrudaya*	*Daha, Pittavikara, Jarajanyavyadhi*	*Matra:3-6gm Anupana:Madhu/Ghruta*
4.	*AlambusadiChurna[46]*	*Bruhat Nighantu Ratnakara*	*Amavata,Vatarakta,Udararoga*	*Matra:3-6gm Anupana:Usnodaka*
5.	*Aswagandhadi Churna[47]*	*Yogaratnakara*	*Tridosaksaya.*	*Matra:3-6gm Anupana:Dugdha*
6.	*Abhadya Churna[49]*	*Bhaisajya Ratnavali*	*AsthigataVata,Snayugatavata, Sandhigataetc*	*Matra:3-6gm Anupana:Usnodaka*
7.	*Amavatari Yoga[45]*	*Rasachintamani*	*Amavata, Vatavyadhi, Sandhivata.*	*Matra:125mg Anupana:Goghruta*
8.	*Astanga Lavana Churna[49]*	*Bhaisajya Ratnavali*	*Agnimandya, Madatyaya, Srotorodha*	*Matra:3-5gm Anupana:Usnodaka*
9.	*Avipattikara Churna [49]*	*Bhaisajya Ratnavali*	*Agnimandya, Malabadha, Amlapittaetc.*	*Matra:3-6gm Anupana:Jala*
10.	*Amalakyadi Churna[44]*	*SarangadharaSamhita*	*Aruchi, Agnimandya, Jwara, ajeerna.*	*Matra:3-6gm Anupana:Usnodaka*
11.	*Intuppukana Churna [50]*	*Sahasrayoga*	*Agnimandya*	*Matra: 6gm Anupana:Usnodaka*
12.	*Eladi Churna[49]*	*Bhaisajya Ratnavali*	*Kasa,Swasa*	*Matra:2-4 gm Anupana:Madhu*
13.	*Karpuradi Churna[50]*	*Sahasrayoga*	*Aruchi,Kasa,Swasa,Ksaya.*	*Matra:1-2gm Anupana:Madhu*
14.	*Kapithastaka Churna [48]*	*Astanga Hrudaya*	*Atisara,grahani,Kasa,swasa etc*	*Matra:2-4 gm Anupana:Takra*
15.	*Gomutra Haritaki[48]*	*Astanga Hrudaya*	*Mukharoga*	*Matra:2-4gm Anupana:Jala*
16.	*Chandanadi Churna [49]*	*Bhaisajya Ratnavali*	*Kasa,Swasa, Jeerna jwara, prameha,Kamala.*	*Matra:1/2-1 gm Anupana:Madhu*

17.	*Chaturjata Churna[44]*	*SarangadharaSamhita*	*Arochaka, Kaphaja roga,Visa, Vaivarnya*	*Matra:2-4gm Anupana:Madhu*
18.	*Chitrakadi Churna[44]*	*SarangadharaSamhita*	*Arochaka,Amajasula,Grahani,* Gulma etc	*Matra:3 gm* Anupana: Usnodaka
19.	*Panchanimba Churna [49]*	*Bhaisajya Ratnavali*	*Kustha*	*Matra: 1-5 gm Anupana:Madhu*
20.	*Sudarsana Churna[49]*	*Bhaisajya Ratnavali*	*Yakrutplihabrudhhi, jwara,visama & jeernajwara etc.*	*Matra:2-4gm Anupana:Usnodaka*
21.	*Swalpanayika Churna [49]*	*Bhaisajya Ratnavali*	*Agnimandya, Grahani*	*Matra:1-2gm Anupana:Kanji*
22.	*Hingwastaka Churna [49]*	*Bhaisajya Ratnavali*	*Agnimandya, Sula, Vataroga*	*Matra:1-2gm Anupana:Goghruta*
23.	*Hingwadi Churna[47]*	*Yogaratnakara*	*Adhmana, Sula, Grahani,Gulma, Vanksanasula,etc.*	*Matra:2-4gm Anupana:Usnodaka*
24.	*Hingu Vachadi Churna[48]*	*Astanga Hrudaya*	*Adhmana, Sula, Pandu, Parswasula, Vastisula,Trikasula, Gudasulaetc.*	*Matra:2-4 gm Anupana:Usnodaka*
25.	*Hutabhugadi Churna [50]*	*Sahasrayoga*	*Agnimandya, Pandu, Sopha,Arsa.*	*Matra:3-6gm Anupana:Takra*
26.	*Katphaladi Churna[44]*	*SarangadharaSamhita*	*Jwara, kasa, swasa, aruchi, Chhardi*	*Matra:5-10gm Anupana:Madhu*
27.	*Gandhakarasayan[47]*	*Yogaratnakara*	*Kandu, Kustha, Viryaksaya, Grahani, jeernajwara,etc.*	*Matra:1-3gm Anupana:Jala*
28.	*Dasana Samskara Churna[49]*	*Bhaisajya Ratnavali*	*Mukharoga,Dantaroga*	*Asperrequired*
29.	*Dadimastaka Churna [49]*	*Bhaisajya Ratnavali*	*Grahani*	*Matra:5-10gm Anupana:Jala*
30.	*Naracha Churna[44]*	*SarangadharaSamhita*	*Adhmana, Udararog a, KaphapittajaSula.*	*Matra:12gm Anupana:Madhu*
31.	*Nasika Churna[50]*	*Sahasrayoga*	*Dustapinasa, Suryavarta, Siroruja, Mukhadurgandha, nasikadurgandhaetc*	*Nasyamatra*
32.	*Panchakola Churna[44]*	*SarangadharaSamhita*	*Aruchi, Anaha, Gulma, Sula, Plihavrudhi.*	*Matra:5-10gm Anupana:Jala*
33.	*Panchanimba Churna [49]*	*Bhaisajya Ratnavali*	*Kustha*	*Matra:1-5gm Anupana:Madhu*
34.	*Palasavijadi Churna [45]*	*Rasodhharatantra*	*Krimiroga*	*Matra:1-3gm Anupana:Guda*
35.	*Musali Churna [44]*	*SarangadharaSamhita*	*Sukraksaya,Dhwajabhanga*	*Matra:5-10gm Anupana:Godugdha*
36.	*Laghugangadhara Churna[44]*	*SarangadharaSamhita*	*Atisara,Pravahika*	*Matra:5-10gm Anupana:Takra*
37.	*Lavangadi Churna[49]*	*Bhaisajya Ratnavali*	*Grahani,Atisara,Raktatisara*	*Matra:5-10gm Anupana:Chagaksira*
38.	*Vidangadi Vhurna[52]*	*Chakradatta*	*Krimiroga*	*Matra:3-5 gm Anupana:Takra*
39.	*SamasarkaraChurna [49]*	*Bhaisajya Ratnavali*	*Animandya,Kasa, Aruchi,Swasa,etc*	*Matra:2-5gm Anupana:usnodaka*

40.	*Saraswata Churna[51]*	*Bhava prakasa*	*Apasmara,Unmada*	*Matra:3-5gm Anupana:Madhu*
41.	*Utpaladya Chuna[52]*	*Chakradatta*	*Ravahika, Jwaratisara.*	*Matra:2-4gm*

SIMPLE CHURNA:

Thalisadi Churna is consisting of fine powder of Talisapatra, Dalchini, Ela, Pipplai, shunthi, Vamsa lochna in the ratio of 1:1. It is the best remedy in acute, chronic and allergic bronchitis. It is very useful in exacerbation of asthma. In chronic asthma it reduces the frequency and severity of asthmatic attack. This was evaluated with by comparative analysis with the marketed formulation of Baidyanath and Dhootapeshwar. The evaluated parameters are as follows extractive values (ethanol and water), Micromerit parameters (bulk density, true density, angle ofrepose and Carr's index) and phytochemical evaluation. The results indicate the presence of almost polar and semi polar constituents in Thalisadi Churna. All the parameters remain in close proximity for each batch of Thalisadi Churna. Therefore, the quality control of Thalisadi Churna which will also assist the regulatory authorities, scientific organizations and manufacture in developing standards.

Fig2: Simple Churna

COMPOUND CHURNA:

Chaturjat Churna is well known Ayurvedic formulation used for Vata and Kapha doshas. It comprises of barks of Cinnamommum zeylanicum, seeds of Elettaria cardamomum and flowers of Mesua ferrea and leaves of Cinnamommum tamala. This combination improves appetite, digestion and palatability of herbal formulations, also corrects respiratory and renal disorders. Therefore, the present study was undertaken to evaluate and establish various quality control parameters of Chaturjat Churna as per Indian Pharmacopeia and WHO guidelines involving physicochemical and phytochemical investigation like extractive value, total ash value, loss on drying, chemical constituents and microscopic determination along with physical characterization like bulk and tap density determination and establishment of quality control parameters for different samples of Chaturjat Churna with a brief comparative study between marketed and laboratory formulations. Evaluation studies showed similarities in all respect. The resultant data analysis and comparisons among them revealed that parameters obtained could be used to lay down a set of new standardization parameters for the preparation of Chaturjat Churnafor obtaining standard quality and efficacy of the herbal formulation.[28-31]

Fig3: Compound Churna

CONCLUSION:

Many different types of kalpanas, or medicines, are currently utilized in Ayurvedic treatment. Ofthese, churna (powder) kalpanas are used extensively in Ayurvedic pharmaceutics because they have various benefits over other dosage forms, including ease of production and cost. Good patient compliance, a plethora of possibilities, and the availability of diverse formulation processes have made powder increasingly attractive in the pharmaceutical industry. It is also stressed that in order to develop a promising and adaptable dosage form with unique performance and characteristics, more recent scientific and technological advancements should be made.

REFERENCE

1. Vasant Lad, B.A.M.S., M.A.Sc. Ayurveda– A brief introduction and guide, www.ayurveda.com.
2. Dr. D R. Lohar. Protocol for testing: Ayurveda, siddha and Unani medicines. Guidelines, Government ofIndia, Ghaziabad, 1-22, 2011.
3. Samantha MK, Pulok.K.Mukhergee. Development of natural products.The Eastern Pharmacist 2000,43:23-24 .
4. Plotz.P.H, Rifai.A. J Biochem 1982, 21: 301-308.
5. Muhammed Nabel, Anwarul Hussan & Gilam. Pharmacological basis of medicinal uses of ginger ingastrointestinal disorders. J Anaesth 2000, 84: 367-71.
6. Kalpana patel, Alkanandarao. Digestive stimulant action of Indian spice mixes in experimental rats. Jdigestive diseases and sciences 2005, 50 : 1880-97.
7. Indian Herbal Pharmacoepia. Indian drug manufacturers association 1998, 1: a 13 – 20.
8. Singh G, Maurya S, Delampasona MP, Catalan CA. A comparison of chemical, antioxidant &antimicrobial studies of cinnamon bark and leaf. Food chemistry & toxicology 2007, 55: 1173 – 1183.
9. Mimica Dukin N, Kujundzic S, Sokovic M, Couladis M. Essential oil composition and antifungal activityof F.vulgarae obtained by distillation conditions. Phytotherapy Research.2003, 17: 368-71.
10. Oussalah M,Caillet S,Lacroix. Mechanism of action of Spanish and Chinese cinnamon & essential oilagainst cell membranes and walls of E.coli. J food products 2006, 69: 1046-55.
11. Kokate.C.K, Purohit.A.P, Gokhale.S.B, Textbook of Pharmacognosy 2002, 13: 550-559.
12. Shan B, Cai YZ & Suu M. Antioxidant capacity of 26 spice extracts & characterization of phenolicconstituents. J Agriculture and food chem. 2005, 53: 7749-50.
13. Svoboda, Robert E. The Hidden Secret of Ayurveda. The Ayurvedic Press Pune, India, 1980.
14. Svoboda, Robert E. Prakruti: Your Ayurvedic Constitution. Geocom Limited, Albuquerque, 1989.
15. Svoboda, Robert E. Ayurveda: Life, Health and Longevity. Penguin, London, 1992.

16. Lad, Vasant. The Complete Book of Ayurvedic Home Remedies. Harmony Books, New York, 1998.
17. Lad, Vasant. Secrets of the Pulse: The Ancient Art of Ayurvedic Pulse Diagnosis. The Ayurvedic Press,Albuquerque, 1996.
18. Frawley, David and Vasant Lad. The Yoga of Herbs. Lotus Press, Santa Fe, 1986.
19. Frawley, David. Ayurvedic Healing. Morson Publishing, Salt Lake City, 1989.
20. Meena A K, Rao M M, Panda P, Yadav A, Singh U. Standardization of Ayurvedic polyherbal formulation, Pancasana Churna. International Journal of Pharmacognosy and Phytochemical Research, 2(1):11-14, 2010.
21. Yadav N P, Dixit V K. Recent approaches in herbal drug standardization. International Journal of Integrative Biology, 2(3):195, 2010.
22. Mosihuzzaman M. protocol on safety, efficacy, standardization and documentation of herbal medicines. International Union of Pure and Applied Chemistry, 80(10):2195-2230, 2008.
23. Rasheed A, Reddy S. A review on standardization of herbal formulation. International Journal ofPhytotherapy, 2(2):74-88, 2012.
24. Purohit A P, Gokhale S B, Kokate C K. Textbook of Pharmacognosy, Nirali Prakashan, Pune, 13:550- 559, 2002.
25. Brahma S K, Debnath PK, Therapeutic importance of Rasayana drugs with special reference to theirmulti-dimensional actions. Arya vaidyan, 16:160–163, 2001.
26. Yasser F M, Kishk Hemat E, Sheshetawy. Indian Medicine. World Journal of Dairy & Food Sciences,5(2):188-196, 2010.
27. Jain S, Koka S, Gupta A, Barik R, Malavia N. Standardization of Chopchiniyadi Churna: An AyurvedicFormulation. Journal of Pharmacognosy, 2(5):61, 2010.
28. Gautam A, Sharma P. Identification, evaluation and standardization of herbal drug: A review. ScholarResearch Library, 22(6):302-315, 2010.
29. Borhade P, Khandelwal K. Review on standardization of Churna, world Journal of Pharmacy &Pharmaceutical Sciences, 1(4):1260-1274, 2012.
30. Khandelwai K R, Practical pharmacognosy 1st edition, Nirali Publication, Pune, 88-90, 1995.
31. Benefits-dosage-ingredients-side-effects.2012/04/12/chaturjataChurna. http://ayurmedinfo.com.
32. Lachman L, Lieberman H.A, Theory and Practice of Industrial Pharmacy, Indian Edition, CBSPublication and Distributors, New Delhi. 2009, 67-68.
33. The Government of India, The Ayurvedic Pharmacopoeia of India, Part II, Vol II, A1-5.
34. Khandelwal, K.R, Practical Pharmacognosy, 12th Edn, Nirali Prakashan, Pune, 2004, 157-168.
35. Anonymous. Quality Control Methods for Medicinal Plant Materials. Geneva: World HealthOrganization. 1998;20:28-30.
36. Anonymous. Quality Standards of Indian Medicinal Plants, NewDelhi, India: Indian Council of MedicalResearch. 2003;1:237
37. Brain KR, Turner TD. The Practical Evaluation of Phytopharmaceuticals. Great Britain: John Wright andSons Ltd. 1975.
38. . Evans WC. Trease and Evans Pharmacognosy, 15th ed. London, United Kingdom: Saunders. 2002;245-7.
39. . Iyengar MA, Nayak SGK. Anatomy of Crude Drugs, 10th ed. Manipal, India: Manipal Press Ltd.2006;8.
40. Iyengar MA. Pharmacognosy of Powdered Crude Drugs, 8th ed. Manipal, India: Manipal Press Ltd. 2007
41. Jackson BP, Snowdon DW. Atlas of Microscopy of Medicinal Plants, Culinary Herbs and spices. NewDelhi, India: CBS Publishers and Distributors.
42. Kokate CK. Practical Pharmacognosy, 4th ed. Delhi, India: Vallabh Prakashan, 2006;26:115-21.
43. Daizo Kunil & Octave Levenspiel (1991)Fludization Engineering, 2nd ed.,john Wiley & Sons:New York,NY.
44. Sarngadhara-samhita Sarngadhara Acharya, Rev. by Adhamalla, Ed. by bramhananda Tripathy, 3rdedition, Choukhambha surabharati prakasana,Varanasi, 1998.
45. The Ayurvedic Formulary Of India, Part- I, Second Edi, Govt Of India, Ministry of AYUSH, New Delhi.
46. The Ayurvedic Formulary Of India, Part- I, First Edi-2011, Govt Of India, Ministry of AYUSH, NewDelhi.
47. Yogaratnakara,Bramhasankara Shastri, 2nd Edition , Chaukhamba Sanskrit Series, Varanasi, 1973.
48. Astanga Hrudaya, Vagbhatta, Ed by Sadasiva Shastri, Choukhamba surabharati prakasana Varanasi,1997.
49. Bhaisajya Ratnavali, Gobindadas sen, ambikadatta sastri, Ninth Edi-1991, Choukhamba SanskrutSansthana, Varanasi.
50. Sahasra yoga
51. Bhavaprakasa Bhavamisra, Ed. by Brahmasankara Mishra, Chaukhamba Sanskrit Series, Varanasi, 8thEdition.
52. Cakradatta, Cakrapanidatta, Ed. by Endradeva Tripathy, Chaukhamba Sanskrit Series, Varanasi.