

A REVIEW ON PHARMACEUTICAL AND THERAPEUTICAL USES OF CHURNA (POWDER) IN AYURVEDA

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ABSTRACT

To understand the advantages and potentials of controlled release dosage forms, it would be beneficial to learn the conventional dos-age forms. Conventional solid dosage forms include powders, granules, capsules, and tablets. Drugs (which are chemicals) are in general more stable in solid state than in liquid state. For this reason, poorly stable drugs are usually prepared in solid dosage forms. In this chapter, we will examine two solid dosage forms, powders.

Keywords: Ayurvedic dosage form, Churna, disease & indication

INTRODUCTION

Powder is a mixture of finely divided drugs and/or chemicals in dry form. Powders can be used internally and externally (*e.g.*, external applications to the skin). Dry powders, however, can be taken orally by some patients who are unable to swallow other solid dosage forms such as capsules and tablets. Although powders *per se* are not used extensively in therapeutics, they are widely used in preparation of various dosage forms. Powdered drugs can be blended with other powdered materials prior to fabrication into other solid dosage forms. Powdered drugs are frequently added to other ingredient to make ointments, pastes, suppositories, and others.

Powder properties relevant to pharmaceutical formulations are single-particle properties, bulk properties, particle–particle interactions, powder morphology (particle size, specific surface area, porosity, and particle shape), and mixing and blending properties (mechanisms of mixing, types of mixing equipment, and minimizing segregation tendencies). It is also important for preparing powder formulation to understand hoppers and powder transfer methods, mechanisms of particle-size reduction, and types of mills.

SYNONIMS: In Ayurveda Rajaha and Kshoda¹ are two synonym words have been used in different classics for churna (Powder).

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 indi-

vidual 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 table².

Table 1:

Definition of powders of herbal drug	Maximum Diameter	Requirments
Very Fine	≤ 180 μm (≤ 0.180 mm)	Passes through a No. 80 sieve
Fine	≤250 μm (≤ 0.250 mm)	Passes through a No. 60 sieve
Moderately Coarse	≤ 425 μm (≤ 0.425 mm)	Passes through a No. 40 sieve
Coarse	≤ 850 μm (≤ 0.850 mm)	Passes through a No. 20 sieve
Very Coarse	≤ 2360 μm (≤ 2.36 mm)	Passes through a No. 8 sieve

FACTORS AFFECTED BY PARTICLE SIZE:

Particle size can affect a number of factors important to dosage from preparation as well as application. They are dissolution rate; suspend ability, uniform distribution, penetrability, and non grittiness. The dissolution rate of particles is dependent on the particle size. The smaller the particle size, the faster is the dissolution. In suspension preparation, it is important to have a good suspend ability (*i.e.*, ability to maintain uniform dispersion in liquid vehicle) of particles. In a powder mixture or capsule and tablets preparation, the ability of drug to have uniform distribution is essential.

Particle size Analysis: The particle size and the size distribution can be measure by a number of methods².

1. Sieving: Sieving is the simplest and probably the most commonly used method for de-

termining the particle-size distribution. A powder mass is placed on top of a sifter (mechanical shaker) that is made of a series of screens with sequentially smaller apertures. The horizontal sieve motion loosens the packing of particles allowing sub sieve particles to pass through. Most widely used screens are woven-wire screens ranging in size starting from 400 openings per inch. In the United States, Tyler standard and US standard (ASTM E11-70) are commonly used. The two standards are different slightly, but can be used interchangeably.

2. Microscopy: Particle size is measured using a calibrated grid background. The microscopic images of particles can be forwarded to a computer and the size distribution can be analyzed by an image analyzer. The resolution limit by light microscopy is 0.2 μm. Electron microscopy can be highly useful for the smaller than 0.2 μm.

3. Sedimentation Rate: The terminal settling velocity of particles through a liquid medium in a gravitational centrifugal environment to calculate the particle size.
4. Coulter Counter: Coulter counter determines the volume distribution of particles suspended in an electrolyte-containing solution. When particle passes through a small orifice, it blocks the electric current. The information of particle volume is used for particle size assuming a spherical shape.
5. Light Scattering: Other automatic particle-size measuring instrument employs scattering principle. This can be performed either in solution or in the dry powder state.
6. Gas Adsorption: The surface area of powdered materials can be measured by adsorption of solute from solution or of a gas. The method in the specific surface area (area/unit mass) Usually, an inert gas, such as nitrogen, is absorbed as a monolayer and the total volume of gas absorbed is used to calculate the specific area, which in turn provides information on the particle size.
4. It is difficult to protect powders containing hygroscopic, deliquescent (tending to melt or dissolve in humid environment), or aromatic materials from decomposition.
5. Uniform, individually wrapped doses of powders (sachets) are required and this may increase the manufacturing expenses. (It is possible to include a spoon in a packet of powder drug. This may result in inaccurate amount of drug delivered).
6. Powder must be a homogeneous of all of the components and be of the most advantages particle size. The particle size of a drug influences the rate of solubility in water. It may also influence the biological activity of a drug.

DISADVANTAGES OF THE POWDER DOSAGE FORM

Powders have several disadvantages as a dosage form as described below:

1. Drugs which deteriorate on exposure to atmospheric condition are not suitable for dispensing in powder forms.
2. Volatile drugs are not suitable for dispensing in powder form.
3. It is undesirable to take bitter or unpleasant tasting drugs by oral administration. Many herbal drugs have very bitter tastes. To overcome the unpleasant taste of the extracts, it was often told that "bitter medicine is better medicine."

ADVANTAGES OF THE POWDER DOSAGE FORM

1. Most of the drugs are available in powder form and it become more convenient for the physician to prescribe specific amount of medicament according to the need of the patient.
2. The smaller particle size of powder produces more rapid absorption than other solid dosage form i.e tablet, capsule and pills etc.
3. Preparation of powder is more economical as compare to other dosage form.
4. The patients who cannot swallow tablets, capsule etc can easily take powder with water or any liquid (*Anupana*)

CHARACTERISTICS OF POWDER: The powder is fine at least 80 mesh sieve or pass through 355 m IS sieve and not less than 50% through 180 m IS sieve.. It should not adhere together or become moister.

**RECOMMENDED MACHINERY/
EQUIPMENT:** For the manufacturing of Churna the machinery/ equipments like Pounding machine, grinder, disintegrator, powder

mixer, and sieve shaker /sifter has been required.

EXPIRE PERIOD: Two years (As per Gazette of India notification No. GSR 764(E), dated 15-10-2009

IMPORTANT CLASICAL FORMULATIONS:

Sl.No	Name of Formulation	Reference	Rogadhikara	Matra/Anupana
1.	<i>Ajamodadi Churna</i> ¹	<i>Sarangadhara Samhita</i>	<i>Sula, Grudhrasi, Amavata, Katiruja, Sandhipida, etc.</i>	<i>Matra:3-6gm Anupana:Usnodaka</i>
2.	<i>Agnimukha Churna</i> ⁶	<i>Yogaratanakara</i>	<i>Udavarta, Ajeerna, Pliharoga, Udararoga, etc.</i>	<i>Matra:3-6gm Anupana:Usnodaka</i>
3.	<i>Amrutadi Churna</i> ⁷	<i>Astanga Hrudaya</i>	<i>Daha, Pittavikara, Jarajanya vyadhi</i>	<i>Matra:3-6gm Anupana:Madhu/ Ghruta</i>
4.	<i>Alambusadi Churna</i> ⁵	<i>Bruhat Nighantu Ratnakara</i>	<i>Amavata, Vatarakta, Udararoga</i>	<i>Matra:3-6gm Anupana:Usnodaka</i>
5.	<i>Aswagandhadi Churna</i> ⁶	<i>Yogaratanakara</i>	<i>Tridosaksaya.</i>	<i>Matra:3-6gm Anupana:Dugdha</i>
6.	<i>Abhadya Churna</i> ⁸	<i>Bhaisajya Ratnavali</i>	<i>Asthigata Vata, Snayugata vata, Sandhigata etc</i>	<i>Matra:3-6gm Anupana:Usnodaka</i>
7.	<i>Amavatari Yoga</i> ³	<i>Rasachintamani</i>	<i>Amavata, Vatavyadhi, Sandhivata.</i>	<i>Matra:125 mg Anupana:Goghruta</i>
8.	<i>Astanga Lavana Churna</i> ⁸	<i>Bhaisajya Ratnavali</i>	<i>Agnimandya, Madatyaya, Srotorodha</i>	<i>Matra:3- 5gm Anupana:Usnodaka</i>
9.	<i>Avipattikara Churna</i> ⁸	<i>Bhaisajya Ratnavali</i>	<i>Agnimandya, Malabadha, Amlapitta etc.</i>	<i>Matra:3-6gm Anupana:Jala</i>
10.	<i>Amalakyadi Churna</i> ¹	<i>Sarangadhara Samhita</i>	<i>Aruchi, Agnimandya, Jwara, ajeerna.</i>	<i>Matra:3-6gm Anupana:Usnodaka</i>
11.	<i>Intupukana Churna</i> ⁹	<i>Sahasrayoga</i>	<i>Agnimandya</i>	<i>Matra: 6gm Anupana:Usnodaka</i>
12.	<i>Eladi Churna</i> ⁸	<i>Bhaisajya Ratnavali</i>	<i>Kasa, Swasa</i>	<i>Matra:2-4 gm Anupana: Madhu</i>
13.	<i>Karpuradi Churna</i> ⁹	<i>Sahasrayoga</i>	<i>Aruchi, Kasa, Swasa, Ksaya.</i>	<i>Matra: 1-2 gm Anupana: Madhu</i>
14.	<i>Kapithastaka Churna</i> ⁷	<i>Astanga Hrudaya</i>	<i>Atisara, grahani, Kasa, swasa etc</i>	<i>Matra:2-4 gm Anupana:Takra</i>
15.	<i>Gomutra Haritaki</i> ⁷	<i>Astanga Hrudaya</i>	<i>Mukharoga</i>	<i>Matra: 2-4 gm Anupana:Jala</i>
16.	<i>Chandanadi Churna</i> ⁸	<i>Bhaisajya Ratnavali</i>	<i>Kasa, Swasa, Jeerna jwara, prameha, Kamala.</i>	<i>Matra:1/2- 1 gm Anupana: Madhu</i>
17.	<i>Chaturjata Churna</i> ¹	<i>Sarangadhara Samhita</i>	<i>Arochaka, Kaphaja roga, Visa, Vaivarnya</i>	<i>Matra:2-4 gm Anupana: Madhu</i>
18.	<i>Chitrakadi Churna</i> ¹	<i>Sarangadhara Samhita</i>	<i>Arochaka, Amajasula, Grahani,</i>	<i>Matra:3 gm</i>

			Gulma etc	Anupana: Usnodaka
19.	Jatiphaladya Churna ¹	Sarangadhara Samhita	Atisara, Grahani, Prabahika, Aruchi, etc.	Matra:1-3 gm Anupana:Jala
20.	Talisadya Churna ¹	Sarangadhara Samhita	Kasa,Swasa.Aruchi, Chhardi , Grahani etc.	Matra:3 gm Anupana: Madhu
21.	Trikatu Churna ⁸	Bhaisajya Ratnavali	Agnimandya, Amadosa, Galaroga, Kasa,Swasa.	Matra:1-3 gm Anupana: Usnodaka
22.	Triphala Churna ¹⁰	Bhavaprakasa	Anaha, netraroga, Prameha,Kaphapittajaroga	Matra:3-6 gm Anupana: Usnodaka
23.	Draksadi Churna ²	Vaidyayogaratnavali	Agnimandya, Chhardi, Ksayaja kasa, Pradara.	Matra:3-6 gm Anupana: Jala
24.	Navayasa Churna ⁸	Bhaisajya Ratnavali	Pandu, Kamala, Prameha pidaka, Hrudroga ,kustha,	Matra:1 gm Anupana: Jala
25.	Narasimha Churna ⁸	Bhaisajya Ratnavali	Ksaya, Sukraksaya, Vali, Palitya, Khalitya, etc.	Matra:1.5 gm Anupana: Milk
26.	Narayana Churna ⁷	Astanga Hrudaya	Udararoga, Gulma,Anaha, Vataroga, Hrudroga etc	Matra: 1-3 gm Anupana: Takra
27.	Nimbadi Churna ⁸	Bhaisajya Ratnavali	Amavata,Vatarakta,Kotha, Kustha, Switra, etc.	Matra:1-3 gm Anupana: Usnodaka
28.	Nyagrodhadi Churna ⁶	Yogaratnakara	Mutraghata, Prameha, Mutrakruchhra, etc.	Matra:1-3 gm Anupana:Triphala kasaya
29.	Panchasama Churna ¹	Sarangadhara Samhita	Adhmana, Sula, Amavata, Arsa, Udararoga	Matra:1-3 gm Anupana: Usnodaka
30.	Pusyanuga Churna ⁸	Bhaisajya Ratnavali	Asrugdara, Swetapradara, Rajadosa, Yonidosa	Matra:1-3 gm Anupana: Tandulodaka
31.	Balachaturbhadrika Churna ⁸	Bhaisajya Ratnavali	Atisara, Chhardi, Kasa, Swasa, Jwara, Balasosha.	Matra: ½- 1 gm Anupana:Madhu
32.	Bruhatgangadhara Churna ¹	Sarangadhara Samhita	Pravahika, Atisara, Grahani	Matra:3-6 gm Anupana: Tandulodaka
33.	Bhallataka Rasayana ¹¹	Rasatarangini	Udararoga, Daurbalya, Raktaksaya	Matra: ½ - 1 gm Anupana: Goghruta
34.	Bhaskara Lavana churna ¹	Sarangadhara Samhita	Agnimandya, Grahani, Sula, Gulma, Ajeerna, etc.	Matra: 3 gm Anupana: Usnodaka
35.	Yavani Sandava ⁷	Astanga Hrudaya	Grahani Parswasula, Arochaka etc.	Matra:1-3 gm Anupana: Usnodaka
36.	Rajanyadi Churna ⁷	Astanga Hrudaya	Atisara, Grahani, Pandu , Kama- la, Agnimandya etc.	Matra:1/2-1 gm Anupana: Madhu
37.	Vaiswanara Churna ¹²	Chakradutta	Admana, Sula, Gulma, Amavata, Hrudroga etc.	Matra:1-3 gm Anupana: Usnodaka
38.	Srungyadi Churna ¹	Sarangadhara Samhita	Kasa, Swasa, jwara , Kapharoga.	Matra:1/4- 1 gm Anupana: Madhu
39.	Samangadi Churna ¹²	Chakradatta	Raktarsa	Matra:2- 4 gm Anupana: Jala
40.	Samudradya Churna ⁸	Bhaisajya Ratnavali	Ajeerna, Parinamasula, Pliha yakrut roga etc.	Matra:1-2 gm Anupana: Usnodaka
41.	Sitopaladi Churna ¹	Sarangadhara Samhita	Pittaja swasa, jwara, kasa,	Matra: 1-3 gm

			Hastapada daha, raktapitta parswasula, ksaya, etc.	Anupana: Madhu
42.	Sudarsana Churna ⁸	Bhaisajya Ratnavali	Yakrutplihabrudhhi, jwara, visama & jeerna jwara etc.	Matra: 2-4 gm Anupana: Usnodaka
43.	Swalpanayika Churna ⁸	Bhaisajya Ratnavali	Agnimandya, Grahani	Matra: 1-2 gm Anupana: Kanji
44.	Hingwastaka Churna ⁸	Bhaisajya Ratnavali	Agnimandya, Sula, Vataroga	Matra: 1-2 gm Anupana: Goghruta
45.	Hingwadi Churna ⁶	Yogaratnakara	Adhmana, Sula, Grahani, Gulma, Vanksanasula, etc.	Matra: 2-4 gm Anupana: Usnodaka
46.	Hingu Vachadi Churna ⁷	Astanga Hrudaya	Adhmana, Sula, Pandu, Parswasula, Vastisula, Trikasula, Gudasula etc.	Matra: 2-4 gm Anupana: Usnodaka
47.	Hutabhugadi Churna ⁹	Sahasrayoga	Agnimandya, Pandu, Sopha, Arsa.	Matra: 3-6 gm Anupana: Takra
48.	Katphaladi Churna ¹	Sarangadhara Samhita	Jwara, kasa, swasa, aruchi, Chhardi	Matra: 5-10 gm Anupana: Madhu
49.	Gandhaka rasayana ⁶	Yogaratnakara	Kandu, Kustha, Viryaksaya, Grahani, jeernajwara, etc.	Matra: 1-3 gm Anupana: Jala
50.	Dasana Samskara Churna ⁸	Bhaisajya Ratnavali	Mukharoga, Dantaroga	As per required
51.	Dadimastaka Churna ⁸	Bhaisajya Ratnavali	Grahani	Matra: 5-10 gm Anupana: Jala
52.	Naracha Churna ¹	Sarangadhara Samhita	Adhmana, Udararoga, Kaphapittaja Sula.	Matra: 12 gm Anupana: Madhu
53.	Nasika Churna ⁹	Sahasrayoga	Dustapinasa, Suryavarta, Siroruja, Mukhadurgandha, nasikadurgandha etc	Nasya matra
54.	Panchakola Churna ¹	Sarangadhara Samhita	Aruchi, Anaha, Gulma, Sula, Plihavrudhi.	Matra: 5-10 gm Anupana: Jala
55.	Panchanimba Churna ⁸	Bhaisajya Ratnavali	Kustha	Matra: 1-5 gm Anupana: Madhu
56.	Palasavijadi Churna ³	Rasodhhara tantra	Krimiroga	Matra: 1-3 gm Anupana: Guda
57.	Musali Churna ¹	Sarangadhara Samhita	Sukra ksaya, Dhwaja bhanga	Matra: 5-10 gm Anupana: Godugdha
58.	Laghugangadhara Churna ¹	Sarangadhara Samhita	Atisara, Pravahika	Matra: 5-10 gm Anupana: Takra
59.	Lavangadi Churna ⁸	Bhaisajya Ratnavali	Grahani, Atisara, Raktatisara	Matra: 5-10 gm Anupana: Chagaksira
60.	Vidangadi Vhurna ¹²	Chakradatta	Krimiroga	Matra: 3-5 gm Anupana: Takra
61.	Samasarkara Churna ⁸	Bhaisajya Ratnavali	Animandya, Kasa, Aruchi, Swasa, etc	Matra: 2-5 gm Anupana: usnodaka
62.	Saraswata Churna ¹⁰	Bhavaprakasa	Apasmara, Unmada	Matra: 3-5 gm Anupana: Madhu
63.	Utpaladya Chuna ¹²	Chakradatta	Ravahika, Jwaratisara.	⁵ Matra: 2-4 gm

				Anupana: Tandulodaka
64.	Karchuradi Churna ⁵	Bruhat nighantu ratnakara	Grahani, Balaksaya, Agnidourvalya	⁵ Matra: 3-6 gm Anupana: Usnodaka
65.	Krusnadi Churna ¹	Sarangadhara Samhita	Balatisara, Balakasa, Jwara, swasa, Vamana	⁵ Matra: 1-3 gm Anupana: Madhu
66.	Triusanadi Churna ⁸	Bhaisajya Ratnavali	Amatisa, Agnimandya.	⁵ Matra: 1-3 gm Anupana: Usnodaka
67.	Danta dhavana Churna ⁵	Vaidyayoga ratnavali	Dantapuya, Mukharoga, dantaroga, etc	For teeth cleaning
68.	⁸ Dhatakyadya Churna	Bhaisajya Ratnavali	Pravahika, Atisara etc	⁵ Matra: 1-3 gm Anupana: Jala
69.	Nagakesaradi Churna ¹⁵	Sidhhayoga Samgraha	Pittatisara, Pravahika, udarasula, raktatisara etc	⁵ Matra: 2-3 gm Anupana: Jala
70.	Pasanabhedadi Churna ¹³	Charaka Samhita	Mutrasmari, mutraghata, mutralpata etc	⁵ Matra: 1-3 gm Anupana: Jala
71.	Badaradya Churna ¹⁴	Gadanigraha	Hrudroga, Vamana, Rajayakma, Raktapitta, Jwara, Kasa. etc.	⁵ Matra: 3-6 gm Anupana: Jala
72.	Bruhat Agnimukha Churna ¹²	Chakradatta	Mandagni, Ajirna, Gulma, Pliharoga, Udararoga, Asthila. etc.	⁵ Matra: 5-10 gm Anupana: Jala
73.	Bhunimbadi Churna ¹⁴	Gadanigraha	Vidradhi	⁵ Matra: 5-10 gm Anupana: Gudodaka
74.	Marichyadi Churna ⁵	Bharata Bhaisajya ratnakara	Udararoga, pliharoga, Mandagni, Gulma, Arsa	⁵ Matra: 3-6 gm Anupana: Jala
75.	Masadi Churna ⁵	Bharata Bhaisajya ratnakara	Somaroga,	⁵ Matra: 6-12 gm Anupana: Godugdha
76.	Mundyadi Churna ⁵	Bharata Bhaisajya ratnakara	Daha, Balya, rasayana etc.	⁵ Matra: 6-12 gm Anupana: Godugdha
77.	Methikadya Churna ¹⁴	Gadanigraha	Raktabata, Mudhagarbha, Pittavikara etc.	⁵ Matra: 10-20 gm Anupana: Jala
78.	Yasthyadi Churna ⁵	Bharata Bhaisajya ratnakara	Sthanya brana	⁵ For external application
79.	Rasanjanadi Churna ⁸	Bhaisajya Ratnavali	Raktatisara, Raktarsa, Prabahika etc	⁵ Matra: 3-6 gm Anupana: Madhu & Tandulodaka
80.	Vidaryadi Churna ¹⁵	Sidhhayoga Samgraha	Sukraksaya	⁵ Matra: 3 gm Anupana: Godugdha

CONCLUSION

In Ayurvedic field of practice several type of *kalpanas* (medicines) are being used presently, *Churna* (Powder) *kalpana* plays an important role in pharmaceutics of Ayurveda, owing to many advantages like easy manufacturing and

economic than other dosage form. Due to availability of various formulation techniques, good patients' compliance and huge potential powder is popularized in the pharmaceutical market. It is also emphasized that newer scientific and technological innovations should be undertaken

for the emergence of promising and versatile dosage form with novel performance and characteristics.

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