HISTORY OF AYURVEDIC PHARMACEUTICAL PREPARATIONS

Dr. Pradeep Kumar Sachan¹, Dr. Pradeep Kumar Jain*² and Dr. Vishnu Prasad Gautam³

¹Reader and Head, Department of Samhita Sanskrit and Siddhant Bundelkhand Govt. Ayurvedic College & Hospital, Jhansi, Uttar Pradesh, India.
²Lecturer and Head, Department of Rasa Shastra and Bhaishajya Kalpana, Bundelkhand Govt. Ayurvedic College & Hospital, Jhansi, Uttar Pradesh, India.
³Associate Professor & Head, Department of Rasa Shastra and Bhaishajya Kalpana, MSM Institute of Ayurveda, BPS Women University, Khanpur Kalan, Sonepat (Haryana).

ABSTRACT
Pharmaceutical preparations are the primary and mandatory part of any medical science. These preparations act as bridge between dietary & medicinal raw materials and success of therapy. The basic preparations of medicines (Aushadha Kalpana) & diet (Ahara Kalpana) from both herbs & metals-minerals are only five- Swarasa, Kalka, Kwatha, Hima & Phanta. The other preparations like – Vati, Gutika, Varti, Snehapaka, Ksheerapaka, Asava, Arishta, Pashhti, Kajjali, Parpati, Bhasma, Kupi-pakwa Rasayana etc. are based on five basic Kalpanas (Preparations) & can be called as derived Preparations. Their Chronological developmental historical description will be beneficial to students regarding thorough knowledge of subject.

KEYWORDS: Ahara Kalpana, Bheshaj Kalpana, Primary preparations and Derived preparations.

HISTORY OF AYURVEDIC PHARMACEUTICAL PREPARATIONS
It is the natural instinct of the human beings to utilize the raw materials of plants (Sthavara), animals (Jangam) & mineral (Audbhid) origin, according to the daily requirements in diet & treatment. They are doing so, since antiquity, for the maintenance of health & curing the disease. For these purpose, the raw materials should be first converted into most effective, acceptable & agreeable form so that they can be ingested & assimilated properly, called
preparations (Kalpana). Depending on the aim they are of two types- Dietetic (Ahara Kalpana) & Pharmaceutical (Bheshaj Kalpana), for Dietetic & Therapeutic purpose respectively. Initially people were might be taking food articles & drugs, without any specific preparation, by crushing with their own teeth. But later, in Paleolithic (40,000 – 10,000 BC) & Mesolithic ages (10,000 – 8000 BC, Pre-Vedic – Pre-Historic period) they were probably started crushing of drugs with stone to express juice or prepare powder. With the invention of fire later in Stone Age, people were starting using fire for heating & boiling the food articles & drugs. These were the initial step of the presently existing preparation, decoction & hot infusion. This historical review verifies the successive invention of present day existing five basic pharmaceutical preparations in Charak Samhita like Swaras (Expressed Juice), Kalka (Powder & Paste), Kwatha (Decoction), Hima (Cold infusion) & Phanta (Hot infusion).

Vedas (6000 – 1000 BC) are the oldest scriptures & source of almost all the subjects, so the roots of various pharmaceutical preparations in preliminary form were also found existing in them. Rig-Veda (6000 – 2500 BC), Ninth Mandal, is holding a description of Soma Rasa.[1] Soma Rasa is also found described in Yajurveda, Samaveda & Atharvaveda. But detail process of its preparation is found mentioned in Brahman text. During its preparation, one may find several pharmaceutical processes & appliances. Soma, called king of herbs, is a divine herb was used to prepare Soma Rasa through crushing with instrument made from stone. Crushed Soma as paste is then mixed with water in earthen or metallic pot & strained in another pot with special appliance by drop by drop method. Soma Rasa preparation is thus basically a Swaras Kalpana (Juice preparation). In Atharvaveda, various drugs are mentioned to use externally & internally in different forms. Silachi & Laksha were mentioned to treat traumatic wound & probably applied externally as paste2. This was the example of Kalka Kalpana (Paste Preparation). A toxic herb Aavaya found to use in skin disorder after detoxification of its juice in fire in Atharvaveda. This was the primitive example of Srita or Kwatha Kalpana (decoction Preparation). Shatpatha Brahamana contains description of boiling of milk with drugs in fire.[3] This was the primitive form of Ksheerapaka Kalpana (Medicated milk preparation) based Kwatha Kalpana. Kaushika Sutra contains making of Phanta with milk.[4] Rig-Veda as well as other Vedas also contains description of use of various wines with the names of Madya, Sura etc., as an example of Sandhana Kalpana[5] (Fermented Preparation). Atharvaveda holds the description of fermented preparation used in treatment with the name” Arishta”.[6] But there is no clear description of process of Sandhan (Fermentation) is found in Vedas. Atharvaveda contains description of boiling of poison with
oil, an example of *Sneha Kalpana* (Fatty/Oily Preparation).\[^7]\] These are the few examples taken into consideration, from several one, found mentioned in *vedic* literature for historical background of pharmaceutical preparations.

It is only from the period of *Ayurvedic* compendia (2000-1000 BC), systematic & scientific descriptions of pharmaceutical preparations were found. The word *Kalpa* or *Kalpana* (Preparation) is found first in *Charak Samhita* (2000BC - 400AD), though it may be applied to both *Ahara* (*Ahara Kalpana*) & *Bheshaj* (*Bheshaj Kalpana* called Pharmaceutical preparations). *Bahukalpana* (Multiple preparation) is described as a characteristic of ideal drug.\[^8]\] It is the *Charaka Samhita* that incorporated first time the scientific & systematic description of pharmaceutical preparations. The primary pharmaceutical preparations that propounded by *Charaka Samhita* are *Swarasa* (Expressed Juice), *Kalka* (Pulver / Paste), *Kwatha / Srita* (Decoction), *Hima / Sheeta* (Cold infusion) & *Phanta* (Hot infusion), called *Pancha Kashaya Kalpana* (Five pharmaceutical preparations).\[^9]\] They are mentioned in order of decreasing potency. The derived meaning of word *Kashaya* in *Kashaya Kalpana* is *extract* (*Niryas*) & etymologically means that which is obtained by pressing.\[^10]\] The drugs of six *Rasa* (taste) except *lavana* (salt), can be used as source for *Kashaya Kalpana* and called *Kashaya Yoni*.\[^11]\] *Sushrut Samhita* (1500 BC- 950 AD) is containing six pharmaceutical preparations- *Latex* (*Ksheera*), Juice, Paste/Powder, Decoction, Cold & Hot infusion.\[^12]\] They are progressively weak in potency. *Ksheera Kalpana* of *Sushrut* is included in *Swarasa Kalpana* of *Charak*. *Ashtang Samgraha* & *Ashtang Hridaya* also containing five preparations like *Charak*. *Swarasa* is generally prepared by expressing the wet herb without heating. It is also made by heating the herb after covering with earthen paste (Closed Heating Method) & *Swarasa* so obtained is called *Putpaka Swarasa*, described in *Sushrut Samhita*. *Swarasa* that is obtained after cutting root or branch of live plant from lower end & applying heat from upper end & collecting at lower end is called *Nirdaha Swarasa*, mentioned in *Charak & Sushrut Samhita*.\[^13]\] *Swarasa* is also prepared from *Patalyantra & Swarasa* so obtained is called *Patal Yantra Swarasa*, described in *Charak & Sushrut Samhita*.\[^14]\] Other preparations of *Charak, Sushrut, Ashtang & other Samhita* like *Asava-Arishta / Abhisahv* (Fermented Preparations), *Rasa kriya, Panak* (Syrup), *Paniya* (Medicated Water), *Sneha Kalpana* (Medicated Oils), *Avaleha* (Linctus) & *Ksheer Pak* (Milk Decoction / Medicated Milk) are based on *Srita Kalpana* and *Vati* (Tablets), *Varti* (wick shaped stick) etc. are based on *Kalka Kalpana*, amongst the basic five pharmaceutical preparations & can be called derived preparations.
Initially before development of *Rasa Shastra Ratna* (Gems) & *Uparatna* (Semi Gems) are used in treatment as powder (*Churna*).\[^{[15]}\] With the beginning of emergence of *Rasa Shastra*, they are converted into different preparations for therapeutic purpose called *Bhasma* & *Pishti*, based on five basic preparations of *Charak*. The specific preparation of *Ratna* & *Upratna*, called *Pishti*, probably came in Ayurvedic text from *Unani* medicine.

Plants whose active principles are existing in its volatile parts were started to use in treatment as specific preparation called *Arka*.\[^{[16]}\] This preparation was introduced in Ayurveda in medieval period probably from interaction with Muslims. It was *Gada Nigraha* of *Sodhala* (1175-1215 AD), that probably contain description of *Arka* extraction first time from *Kharjurasav*\[^{[17]}\].

*Bhasma* preparation is basically preparation of *Rasa Shastra* for Metals. The word *Bhasma* is used in *Charak* & *Sushrut Samhita* for the ash of herbal drugs, not in the sense of *Bhasma* of metals as in *Rasa Shastra*. *Bhasma* of animal products in *Sushrut Samhita* is also mentioned as *Masi Kalpana* (*Krishna Sarpa Masi*). Before the emergence of *Rasa Shastra* metals in *Charak* & *Sushrut Samhita* are mentioned with use in treatment as *Churna* (Powder) or *Rajas* or *Ayaskriti*.\[^{[18]}\] These Metals are made into fine powder by heating thin foils to red hot & then dip into the decoctions of *Triphala*, cow urine, saline water & different *Kshar* (*Nirvapan Process*).\[^{[19]}\]

*Ashtanga Samgraha* (505-587 AD) probably contains first time the indication of preparation of *Bhasma* by subjecting the metals to heating in a closed crucible (*Musha*).\[^{[20]}\] This view is further supported by mentioning of *Musha*, *Ghati Musha* & *Andha Musha* at different places in the text.\[^{[21]}\] But in this text too, the word *Bhasma* is not mentioned instead of this the word *Churna* (powder) is used. True method of making *Bhasma* of metals & minerals through *Agniputa* (medium of indicating the intensity of heat during process of *Bhasma* preparation) became popular only after the development of *Rasa shastra* in sixth century & onwards. Initial steps involved currently in *Rasa Shastra* in making *Lauha* (Iron) *Bhasma* through heating are *Sthalipak* & *Bhanupaka*, found first in *Sushrut Samhita*\[^{[22]}\] & *Ashtang Samgraha*\[^{[23]}\] respectively. The process of *Bhasma* preparation is called *Marana*. The minerals usually contain some or other metals as their important constituents & the method of separating them is called *Sattva Patana* & separated metal is called *Sattva* in *Rasa Shastra*. They were also subjected to *Bhasma* formation for internal use. *Sattva Patan* of *Makshika* is found first in *Rasa Ratnakara* & *Rasendra Mangal* in 7\(^{th}\) – 8\(^{th}\) century.\[^{[24]}\]
Parada (Mercury) is also called Rasa & the science that deals mainly with the use of Parada is known as Rasa Shastra. Mercury cannot be used alone for therapeutic purpose. It must be combined with other drugs so that can be used for therapeutic purpose effectively. The drugs which are produced with the combination of mercury are called Rasa-Aushadhi & the preparations are known as Parpati, Kajjali, Khalva Rasa, Kupi-pakwa Rasa, etc.

Parpati, generally made from Parada (Mercury), is described first in text of Chakrapani called Chakradutta (11th century), as Rasa Parpati, in the context of a disease known as Grahani (Sprue).[25] This preparation was the beginning of use of mercury for therapeutic purpose internally. Text before Chakradutta, Rasendra Mangala of Nagarjuna (8th century), also containing the word Parpati but authenticity regarding validity of this text is doubtful. Otherwise this was the first text to contain the description of Parpati preparation.[26] Therefore Mercury (Parada) was started to use internally since eleventh century. Before this it was found to be used externally as Anjana (Collyrium) in Sushrut Samhita[27] & Ashtang Samgrah.[28] Charak Samhita is also containing the word Rasottamaih in the context of treatment of wound in one of the formulation, applied externally for Savarnikaran of skin (making skin color normal).[29] But the word Rasa in this reference is not definitely for Mercury, it might be for clarified butter (Ghrit). The word Nigrahita Rasa is mentioned in Charak Samhita in the context of Gandhak-Swarnamakshika Yoga for Kushtha, but probably it was not for Mercury instead used for Jati Swaras.[30] Therefore, internal use of Mercury is found to be used first time in Ashtang Samgraha with Swarnamakshika, Lauha, Shilajatu etc. not with sulphur as in text of Rasa Shastra.[31]

Khalva preparations are more important & basic preparations. They don’t require heat during preparation & are made in mortar. They were used for therapeutic purpose as well as a vehicle for manufacturing of other drugs like Kajjali, Mugdha Rasa etc.

Kupi-pakwa Rasayana are the mercurial preparations prepared by heating Mercury or Kajjali in Kupi (Glass bottle). Kupi-pakwa Rasayana are of two types – Sagandh & Nirgandh. Sagandha Kupi-pakwa Rasayana preparation (as Rasa Sindura by the name Uday Bhaskar Rasa) & Nirgandh Kupi-pakwa Rasayana (as Rasa Karpura by the name Ghan Sara) is found first described in the text of Shri Yashodhara Bhatta known as Rasa Prakash Sudhakar (12th – 13th century).[32] Mercury until & unless is not heated with Gandhaka (Sulphur) in a device, is neither fully therapeutically active nor possessing the Rasayana (Rejuvenating) property. This process of treatment of Mercury with Sulphur to enhance its capacity to engulf
the other metals like Gold, Silver etc. in it is called Gandhaka Jarana (burning of sulphur with mercury). This process was first mentioned in Rasa Hridaya Tantra of Bhikshu Govind in tenth century.\[33\] This Gandhaka Jarana later developed into Kupi-pakwa Rasa. Pottali preparation of Parada was described first in Rasa Ratnakar of Nityanath in fifteenth century.\[34\]

CONCLUSION

The review of historical data infers that use of herbs, metal & minerals for the maintenance of health & curing the disease starts with the natural instinct with primitive way of crushing with tooth to reached to the height of more scientific & systematic methods & forms of preparations. The basic preparations of medicines (Aushadha Kalpana) & diet (Ahara Kalpana) from both herbs & metals-minerals are only five- Swarasa, Kalka, Kwatha, Hima & Phanta. The other preparations like – Vati, Gutika, Varti, Snehapaka, Ksheerapaka, Asava, Arishta, Pishki, Kajjali, Parpati, Bhasma, Kupi-pakwa Rasayana etc. are based on five basic Kalpanas (Preparations) & can be called as derived Preparations.

**CHRONOLOGICAL DEVELOPMENT OF AYURVEDIC PHARMACEUTICAL PREPARATIONS**

1. **CRUSHING WITH TEETH** (SINCE ANTIQUITY)
2. **CRUSHING WITH STONES AS JUICE OR POWDER** (PALEOLITHIC & MESOLITHIC AGES – PRE-VEDIC / PRE-HISTORIC PERIOD)
3. **POURING IN COLD WATER AS HIMA**
4. **BOILING WITH WATER AS DECOCTIONS OR PHANT** (WITH INVENTION OF FIRE IN ABOUT 350,000 YEARS AGO - IN STONE AGE)

- **Soma Rasa as Swarasa Kalpana** + **Phant Kalpana** + **Sandhan Kalpana**  
  (Rigved)

- **Silachi & Laksha as Kalka Kalpana** + **Sandhan Kalpana** + **Sneha Kalpana**  
  (Atharvaveda)

- **Srīta / Kwatha Kalpana**  
  (Atharvaveda)

- **Ksheerapaka Kalpana**  
  (Shatpatha Brahmana)

- **Phanta with milk.**  
  (Kaushika Sutra)
PANCHA KASHAYA KALPANA - SWARAS (EXPRESSED JUICE), KALKA (POWDER & PASTE), KWATHA (DECOCTION), HIMA (COLD INFUSION) & PHANTA (HOT INFUSION).

(CHARAK SAMHITA 2500 BC- 400AD)

SHAD KASHAYA KALPANA - LATEX (KSHEERA), JUICE, PASTE/POWDER, DECOCTION, COLD & HOT INFUSION.

(SUSHRUT SAMHITA 1500 BC – 900 AD)

MASI KALPANA

(SUSHRUT SAMHITA)

METALS AS CHURNA / AYASKRITI

(CHARAK & SUSHRUT SAMHITA)

RATNA & UPARATNA AS CHURNA

(CHARAK & SUSHRUT SAMHITA)

METALS AS BHASMA

(ASHTANG SAMGRAHA - 550 AD)

SATTVA / SATTVAPATAN

(RASA RATNAKARA & RASENDRAMANGAL, 7-8 CENTURY)

PARPATI KALPANA

(CHAKRADUTTA - 1075 AD)

ARKA KALPANA

(GADA NIGRAHA - 1175-1215 AD)

SAGANDHA KUPIPAKWA RASAYAN AS RASA SINDURA BY THE NAME UDAYBHASKAR RASA & NIRGANDHA KUPIPAKWA RASAYAN (AS RASA KARPURA BY THE NAME GHANSARA)

(RASA PRAKASH SUDHAKARA OF TWELFTH-THIRTEENTH CENTURY)

POTTALI RASAYAN KALPANA

(RASA RATNAKAR - FIFTEENTH CENTURY)

REFERENCES

1. History of Medicine in India, P.V. Sharma, 1st print, 1992; 53: 393.
3. S.P.B. 2.3.1.14, Abhinav Bhaishajya Kalpana, Dr. Ashok Kumar Shrivastav, 1st edition, 7.
5. R.V. 2.14.11, 6.68.10.
7. A.V. 4.7.3.
8. Ch. Su.9/7.
11. Ch.Su.4/6 & Chakrapani Commentary on it.
12. S.Su.44/91.
18. Ch.Chi.16/70-79, Ch.Chi.23/239.
25. Chakradutta, Grahani Chikitsa chapter 96.
30. Ch. Chi. 7/71.