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Standardization of *Panchavaktra Rasa* w.s.r to *Rasa Prakash Sudhakara*

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ABSTRACT:

Rasashastra and *Bhaishajya Kalpana* is the most important branch of learning in the field of Ayurveda. To save the lives of ailing people physician should also have a thorough grip on the principles of the formulations and their practical application. With the art and skill of formulation, a poisonous drug can be transmuted into a safe and effective drug. A simple drug can be converted into a most potent one. *Panchavaktra rasa* (PR) had been mentioned in various literatures viz, *Rasa Prakash Sudhakar*, *Ras ratna Sammuchaya*, *Yoga Ratnakara*, *Sharangadhara* etc. in *Jwara rogadhikara*. The present research work entitled "***Standardization of Panchavaktra rasa w.s.r to Rasa Prakash Sudhakara***" was planned to standardize the formulations as per the reference of *Rasa Prakash Sudhakara.* The *Samguna Gandhaka kajjali ,Maricha churna*, *Pippali Churna*, *Shuddha Vatsnabha churna*, *Shuddha Tankana churna* were mixed and levigated with *Dhatura patra swarasa* for the formulation of *Panchavakta Rasa*.The samples were analyzed based on Organoleptic Parameters, i.e., Appearance, Colour, Odour, Taste and Physico-chemical Parameters i.e., pH Value, Loss on Drying, Ash Value, Acid insoluble Ash, Water Soluble Ash, Sulphated Ash, Alcohol Soluble Extractive, Water Soluble Extractive. The samples were analysed for standardization of vati parameters i.e., hardness of pills, friability test, disintegration time etc. Total bacterial count and Total fungal count are under the permissible limit depicted in the study. For qualitative analysis HPTLC & ICP-MS were done. The Samples were analysed on different wavelengths 510 nm, 366 nm (Long) & 254 nm (Short). PR_1 Sample confirmed 10 distinct spots at 510 nm, 07 distinct spots at 366 nm and 09 spots at 254 nm whereas PR_2 sample confirmed 11 distinct spots at 510 nm, 06 distinct spots at 366 nm and 08 spots at 254 nm. The PR_3 sample confirmed 10 distinct spots at 510 nm, 07 distinct spots at 366 nm and 08 spots at 254 nm. The Rf values of spots differentiate the chemical composition of the sample.

Keywords: *Panchavaktra rasa*, *Jwara rogadhikaar*, *Kajjali* , *Maricha*, HPTLC, ICP-MS

INTRODUCTION

Ayurveda is one of the most ancient systems of life, health and cure. Its antiquity goes back to the Vedas. Ayurveda is a highly evolved and codified system of life and health science based on its own unique concepts and fundamental principles. Ayurveda was developed to safeguard Arogya (health) which is considered to be essential for the

achievement of the four primary objects of life viz. *Dharma, Artha, Kama* and *Moksha*.

Therefore, Ayurveda the Science of Health and Healing has given great emphasis to the comprehensive knowledge of drugs, preservation and dispensing of prepared drugs under the broad heading known as *Rasashastra and Bhaishajya Kalpana*. The preceptors of *Rasashastra* were initially indulged in the achievement of a disease-free body (*Dehavedha*) and conversion of a lower metal to a higher metal i.e., a metal having higher economic value (*Lohavedha*) simultaneously, but later their attempts in the field of *Dehavadha* became dominant. Now *Rasashastra* has become a well-established branch of Ayurveda serving humanity with its unique heritage of drugs derived from metallic, mineral and animal origin combined with certain herbs. Actually, *Rasaushadhis* have given Ayurveda a complete novel health care system. The innate qualities like quick action, minimal dose, tastelessness, prolonged shelf life, better palatability of *Rasaushadhis* have helped them to conquer the compliance of the patients.

Need of Study

Standardization of herbal medicines is the process of prescribing a set of standards or inherent characteristics, constant parameters, definitive qualitative and quantitative values that carry an assurance of quality, efficacy, safety, and reproducibility.[1] *Panchavaktra Rasa* is generally used to treat fever of different types. It has antipyretic and analgesic activities. *Panchavaktra Rasa* is effective medicine for common cold, flu and other infectious diseases. A number of formulae are available with the name of *Panchavaktra Rasa* in different texts. However, the formula which was first described in *Rasa Prakash Sudhakar* was selected for the study.

For formulation selected for present study is *Panchavaktra Rasa* which is a herbo-mineral medicine mentioned in various classics of *Rasashastra*. The present formulation has been taken from the book *Rasa Prakasha Sudhakar* (Chapter-8 verse 99-101) where the formulation is mentioned for the first time. It contains *Parada, Vatsanabha, Gandhaka, Maricha, Tankana, Pippali* and *Dhatura*.

Hence, keeping in view all the above facts, the present study has been planned to work on "***Standardization of Panchavaktra rasa w.s.r to Rasa Prakash Sudhakara***" with following objectives.

Objectives

- To compile and bring all formulations and literature on *Panchavaktra Rasa*.
- To prepare 3 samples of *Panchavaktra Rasa* & lay down the SOPs & SMPs.
- To evaluate the analytical parameters of the above samples.

MATERIALS AND METHODS

The present study was conducted in three steps as following

1. Drug Review
2. Pharmaceutical Study
3. Analytical Study

The ingredients of *Panchavaktra Rasa* were procured from the pharmacy, NIA, Jaipur, & identified or authenticated by expert of the P.G. Department of Dravyaguna Vigyan, NIA, Jaipur. The drugs were prepared in P.G. Department of Rasashastra & Bhaishajya Kalpana, as per the references.

1.**Drug Review**

Rasaushadhis are categorized under different heading such as *Khalveeya rasayogas, Parpatikalpana, Kupipakvarasayanas, Pottali kalpana* etc. Among these *Khalveeya rasayogas* is important as it is indicated in various diseases and also acts as *rasayana*. The *Khalveeya rasayogas* are the combinations of herbal, mineral and animal products so that we can have the effect of all collectively in a single formula. These are administered in smaller doses to get faster relief and combating many ailments by proper *Anupana* and *Sahapana*. It takes less space for manufacturing and storing. Major ingredients have *ushna virya and katu rasa*.

The *Rasa, guna, virya, vipaka, karma* had been described in table no. 2.

2. **Pharmaceutical Study**

The preparation of *Panchavaktra Rasa* is based on availability, feasibility in classical indication of *Rasashastra*, traditional value and expert opinions. All the raw materials were procured from the N.I.A. pharmacy. Pharmaceutical processes carried out during the study are as follows

- Purification (*Shodhana*) of raw materials
- Preparation of powders of crude drugs.
- Mixing of powders and *Kajjali*
- Preparing 3 batches of *Panchavaktra Rasa*.

Practical No.1: *Samanya Shodhana* of *Parada*[2]

Process – *Mardana*

Apparatus –*Khalva yantra*, Vessels, Cloth etc.

Ingredients- *Ashuddha Parada*-1 part (300 g)

Sudha (Lime)-1 part (300 g)

Lashuna (Garlic) -1 part (252 g)
Saindhava Lavana -½ part (126 g)
Hot Water - Q.S. for *Prakshalana*

Procedure:–

At first *Parada* and *Sudha* were put in a *Khalva yantra* and *Mardana* (levigation) was started. Everyday *Mardana* was done for 3 Hours. *Mardana* was done for 24 hours in total. After 24 hours of *Mardana* the *Parada* was separated from the mixture, squeezing it through a two folded cloth. Some part of *Parada* still remained in the cloth and with the *Sudha churna*. To obtain the *Parada*, the whole *Sudha churna* was put into hot water and kept overnight. Next morning the supernatant liquid was separated out and the settled material was taken in a stainless steel vessel and dried in shade. After one hour it was seen that *Parada* globules were formed and collected at the centre of the vessel which was taken out.

The *Parada* obtained from the mixture was again put in the *Khalva yantra* and *Mardana* was done with the equal part of garlic and half part of *Saindhava Lavana Mardana* was done every day for three hours. After 3 hrs. it was observed that the colour of the mixture had turned black and mercury was divided into very fine globules. When the *kalka* was almost dry it was difficult to separate the *Parada* from it. Hence it was put into hot water and left for 30 minutes after macerating well. Then the supernatant water was separated out into other vessel. It was seen that many globules of *Parada* settled down at the bottom but with a black colored layer on their surface. All these globules were collected and washed repeatedly with hot water. Mercury thus obtained was dried and then filtered through a two folded cloth and stored in a glass bottle. The changes observed in physical character of *Parad* are shown in Table no.3

Results–

- Initial weight of *Parada* - 300 g
- Weight of *Parada* after *Mardana* with Lime - 252 g
- Weight of *Parada* after *Mardana* with Garlic & after *Prakshalana* - 236 g
- Total loss of weight during the process - 64 g
- Total loss - 22%

Practical No.2: *Gandhaka Shodhana*[3]

Ingredients

Ashuddha Gandhaka : 500 g.
Cow's Milk : 6 L (For 4 times)
Ghee : 30-40 g. (For 3 times)
Hot water : Q S.

Procedure:

Raw *Gandhaka* (500 g.) was crushed into fine powder with the help of *Khalva yantra*. 2 L Milk was taken in a steel container and warmed. The mouth of the container was covered with a clean cotton cloth (smeared with Ghee) and fixed with thread. 10 g of Ghee was taken in a frying pan and melted on gentle heat. Raw *Gandhaka* was added in to the frying pan and melted on mild heat with continuous stirring. Melted *Gandhaka* was immediately poured into milk through the cotton cloth. The melted *Gandhaka* on the cloth was continuously stirred to pass completely in to the milk. Filtered *Gandhaka* was collected from the container and washed with warm water and dried. The whole process was repeated for three times, changing milk and ghee each time. The final weight of *shuddh Gandhaka* obtained was 450 g. with loss of 10%.

Practical No.3: *Kajjali* Preparation[4]

Principle – *Mardana* (Levigation)

Procedure:-

Samanya Shodhita Parada (235 g.) and *Shuddha Gandhaka* (235 g.) was taken in equal quantity and triturated in *Khalva yantra*. Gradually the white colour of *Parada* and greenish yellow colour of *Gandhaka* disappeared and the black powder was formed. Levigation was continued till the *Kajjali* became completely *Nishchandra*. After 24 hours of trituration, the mixture completely turned into *Kajjali* and fulfilled all the criteria of *Kajjali.* For confirmation of *Nishchandratva* a pinch of *Kajjali* was added to a drop of water on palm and rubbed gently so as to trace out the free mercury particles. The physical characters of *Kajjali* are shown in table no.4.

Results

- Total time taken for *Kajjali* : 24 hrs.
- Wt. of *Parada* and *Gandhaka* : 470 g.
- Wt. of *Kajjali* obtained : 448 g.
- Total wt. loss : 22 g.

Practical No.4: *Vatsanabha Shodhana*[5]

Materials - *Ashuddha Vatsanabha* - 700 g.
Gomutra - 1500 ml. (each time for three days)
Godugdha - 5 lt.

Procedure –

Ashuddha Vatsanabha was made into small pieces of bengal-gram size and the same were immersed in fresh *Gomutra* within steel container. *Gomutra* was taken in that quantity which was sufficient for immersing those pieces. Hence, it was taken 1500 ml. The container was kept directly under sunlight.

On the next day, the covering of *Vatsanabha* was remove and it was kept again in container containing *Gomutra.*

Next day *Gomutra* was replaced by fresh one. Same procedure was repeated two times more for consecutively three days. *Vatsanabha* becomes soft, as nails can scratch it. After three days, pieces of *Vatsanabha* were collected and washed with the help of warm water. Then further, *Shodhana* of *Vatsanabha* was done with *Godugdha* by *swedana* method with the help of *Dola yantra* for three hours. After this, pieces of *Vatsanabha* were washed with the warm water and it was allowed to be dried completely. After complete drying it was grinded to fine powder and stored in airtight container. The physical characters of *Vatsanabha* after *Shodhana* are shown in table no.5.

Practical No.5: *Tankana Shodhana*[6]

Procedure –

Firstly, raw *Ashuddha Tankana* (400 g.) was made into coarse powdered in the *Khalva yantra*. This powder was taken in a stainless steel *kadhai* and was subjected to mild heat. Constant roasting and stirring with ladle was done. Small particles of *Tankana* fly up into air while roasting. After diminishing of crackling sound which was the indication of crystalline water evaporation, then the roasting was stopped. After self-cooling, the puffed material was powdered with the help of *Khalva yantra* and kept airtight in plastic pet jars for further use. The final weight of *Shuddha Tankana* obtained was 227 g. with a yield of 56.75%.

Practical No.6: Preparation of *Churna* of the Herbal Ingredients [7]

Equipments : Grinder and Mesh (120N), steel tray, Gamma glove etc.

Pharmaceutical processes carried out are as follows

1) **Removal of foreign matter from crude drugs**: Before undergoing any pharmaceutical process there is need for careful inspection of raw materials for presence of foreign matter like sand, dust, seeds, etc. Crude drugs were weighed individually. By careful inspection, foreign matters like dust, sand etc. were removed. Then the entire ingredients were cleaned by cloth dusting. The weight of drugs were noted again to calculate the loss of weight and were stored in separate plastic bags.
2) **Powdering of crude drugs:** *Maricha* and *pippali* were powdered separately with the help of grinder and sieved through mesh (120N). After it powder took in close glass jar separately.

The loss during powdering of crude drugs are shown in Table no.6.

Practical No.7: Preparation of *Dhatura Patra Swarasa* for *Bhawana*[8]

Equipments – Iron *Udookhala yantra*, Mixer cum grinder, cloth pieces,steel container, glass jar, measuring cylinder, etc.

Procedure –

Pounded material (3.560 Kg) was put into mixer and smooth Paste (*Kalka*) was prepared. The *kalka* was expressed through the cotton cloth by manual method. Filtered juice (*swarasa*) was then collected into a steel container. Obtained *swarasa* was measured by measuring cylinder and then used for *bhawana* process. Fresh *swarasa* (2420 ml) was prepared and used each time. Total yield was 67.98 %.

Practical No.8: Preparation of Three Samples of *Panchavaktra Rasa*[9]

Materials: following ingredients were taken in similar quantity i.e., 30 g. each.

Samguna Gandhaka Kajjali	60 g.
Maricha Churna	30 g.
Pippali Churna	30 g.
Shuddha Tankana Churna	30 g.
Suddha Vatsanabha Churna	30 g.
Total Wt.	180 g.

Procedure -

Powdered ingredients were used for preparing three different samples of *Panchavaktra rasa*. All the ingredients were weighed as per the requirement. First we take the *Samguna Gandhaka Kajjali* in a *Khalva-yantra* and *mardana* was carried out for few minutes. Then fine powders of *pippali* and *maricha* were added one by one and triturated it for few minutes. The remaining fine powders of *Shodhita Vatsanabha and Shodhita Tankana* were added and triturate it for few minutes till it attains the uniform mixture. Finally this uniform mixture was levigated with required quantity of *Dhatura patra swarasa* for 8 hr for each sample till it attain the stage of *kalka*. Then handmade *vati* of size 125 mg. were prepared, dried in shade and stored in airtight container. The observation recorded during *Bhawana* are shown in Table no.7.

3.Analytical Study

After the preparation of *Panchavaktra Rasa* prior to its administration, all the three samples of *Panchavaktra Rasa* were assessed on various analytical parameters. The Analytical tests were performed at Drug Testing Laboratory, Dept. of *Rasashastra* and *Bhaishajya Kalpana*, National Institute of Ayurveda, Jaipur and S. R.

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The Test parameters were taken according to "Protocol for Testing of *Ayurvedic, Siddha* and *Unani* medicines", Govt. of India, Dept. of Ayush, Ministry of Health and Family Welfare, Pharmacopoeial Laboratory for Indian Medicines, Ghaziabad; *Ayurvedic* Pharmacopoeia of India, 2008 Dept. of Ayush, Govt. of India, and "Laboratory Guide for the Analysis of *Ayurvedic* and *Siddha* Formulations", CCRAS, Dept. of Ayush, Govt. of India, 2010.

The study has been done on the following parameters:

1. **Organoleptic parameters:**
   The results of parameters like Appearance, Colour, Taste, Odour of Samples of *Panchavaktra Rasa* (PR_1, PR_2, PR_3) are shown in Table no.8.
2. **Pharmaceutical standardization of *Vati***
   The results of parameters like Hardness of pills, Friability test, Disintegration test of Samples of *Panchavaktra Rasa vati* (PR_1, PR_2, PR_3) are shown in Table no.9.
3. **Physico-chemical constants:**
   The results of parameters like pH value, Loss on drying, Ash value, Acid Insoluble ash, Water soluble ash, Sulphated Ash, Alcohol soluble extractive, Water soluble extractive of Samples of *Panchavaktra Rasa* (PR_1, PR_2, PR_3) are shown in Table no.10.
4. **Test for microbial contamination**
   The results of parameters like Total bacterial count, Total fungal count of Samples of *Panchavaktra Rasa* (PR_1, PR_2, PR_3) are shown in Table no.11.
5. **Qualitative and quantitative analysis**
   The result of ICP-MS (Inductively Coupled Plasma-Mass Spectrometry) of Samples of *Panchavaktra Rasa* (PR_1, PR_2, PR_3) are shown in Table no.12.
   The result of HPTLC (High performance Thin layer chromatography) of Samples of *Panchavaktra Rasa* (PR_1, PR_2, PR_3) are shown in Table no.13.

DISCUSSION

Shodhan of *Parada* was done as per the method from *Rasa Tarangini* 300 g. of *Parada* was taken, out of which 8.4% loss occurs while *shodhan* with *Shudha* and At the end after *shodhan* with *Saindhav* and *Leshuna* , total *Parada* obtained was 236 g. and total 64 g. was lost (22 %). This may be due to handling loss or *jalgati* and *malgati* during the procedure. After *shodhan Parada* was appear to be smooth and shining. *Shodhana* of *Gandhaka* was carried out according to references of *Rasaamritam* Screening of all the *Rasa* texts reveals that most of the *Acharyas* have advised the *Shodhana* of *Gandhaka* by milk. *Shodhana* by other materials have also been indicated according to the need for therapeutic purpose. Thus in the present study, *Gogmuta* and *Godugdh* was taken as *Shodhana* drug for *Gandhaka*. Both of them are useful to remove water as well as fat soluble impurities of *Gandhaka*. Total 10% loss is seen due to removal of impurities as well as some spilling due to handelling loss

Samaguna Kajjali was prepared according to the *Rasa Tarangini*. In this practical *Kajjali* was prepared using equal quantity of *Suddha Parada* (235 g.) and *SuddhaGandhaka* (235 g.). Trituration of *Parada* and *Gandhaka* was done in *khalva yantra* for 24 hours till all the tests of *Kajjali* became positive. In the prepared *Kajjali*, there was loss of 22 g. The loss in weight may be due to spilling out of material during trituration.

Shodhana of *Vatsanabha*, was carried out according to the method prescribed by AFI. Here the process using *Gomutra* was adopted. As *Vatsanabha* is an established toxic drug and *Gomutra* contains a *Vishahara* property. Simultaneously, *Gomutra* potentiates the *Vata-kaphahara* properties of *Vatsanabha*, being a *Vata-kaphaharadravya* itself. The loss during *Vatsanabha Shodhana* could be attributed due to two reasons i.e. in making pieces of *Vatsanabha* and washing out of soluble part of *Vatsanabha* while replacing *Gomutra* daily and at last, in washing with hot water. So, for preventing this loss, instead of making small pieces first, the whole *Vatsanabha* root should be immersed in *Gomutra* bundled in cotton cloth and at last day after washing with hot water, pieces should be made with the help of cutter

Shodhana of *Tankana* was done as per *Ayurveda Prakash* reference. *Tankana* plays an important role in *Panchavaktra Rasa* and *Tribhuvana Kirti Rasa* preparation, as it is said to be an antidote of *Vatsanabha*. *Tankana* has been used to decrease the harmful effects of *Vatsanabha*. The impurity of *Tankana* is its crystalline water content. Hence, after undergoing *Shodhana*, its weight decreased considerably. The yield of *Shuddha Tankana* is 56.75%.

For PR *Vati* preparation the powders after accurately weighing were levigated with the *Dhatura Patra Swarasa*. The juice consumed was 350ml of *Dhatura* in each sample. Final wt 213-14 g weight gain in each sample was observed amounting to 9.86% and this might be due to addition of the solid contents from the liquid that have been used. As per the organoleptic evaluation of *Panchavaktra Rasa*, all the three sample *vati* are same black in colour and *katu* in *rasa* according to their constituents like *Kajjali* etc.

The colour mainly reflects the materials present in the drugs acquiring the colour following levigation and taste of drug is characteristic of ingredients used in formulation. Among the physico chemical parameters the hardness of *vati* denotes the resistance of the *vati* to chipping, abrasion or breakage under condition of storage, transportation, and handling before usage depends on its hardness. Hardness of PR is little high which is difficult to explain, but may be due to *Bhawana dravyas* and will be recommended to powder it before use. The testing of a tablets hardness (or more correctly breaking force) plays a vital role in both product development and subsequent quality control.

LOD determines the amount of volatile matter. The moisture content of a drug should be minimized in order to prevent decomposition of product either due to chemical changes or microbial contamination. Excess of moister in drug encourage microbial growth, presence of fungi or insects and deterioration following hydrolysis. LOD of all samples of PR are within limits indicating less moisture presence. Total ash is one of the criteria to judge the identity and purity of a drug. The residue remaining after ignition is called ash which generally content some inorganic salts derived from the sample but some adulteration may be added form sands and soil. The data indicates that three samples of PR have some elevation due to addition of impurities like silica. Total microbial count and total fungal count in samples of PR are under the permissible limits indicating hygienic conditions for handling and storage condition.

CONCLUSION

Panchavaktra Rasa selected for the present study, is the formulation indicated in *jwara roga.* Most of the ingredients are of *katu* rasa and *pittahara* properties which help in *sampraptvightana* of *jwara*. *Kajjali* is *yogavahidravya* acting as bio-enhancer and in turn improving bio-availability of formulation. Average value of various parameters like hardness, disintegration time, LOD, total ash, water soluble ash, acid insoluble ash, water soluble ext., alcohol soluble extract, pH for PR (8.7) hardness (9.37), Friability (0), disintegration time (41.33), LOD (11.3), total ash (18.05), water soluble ash (6.17), acid insoluble ash (2.41), water soluble extract (24.57), alcohol soluble extract (5.45). HPTLC finger printing of samples of PR shows 8-11 spots of all the samples which confirms the chemical nature and distribution pattern in specified mobile phase. PR_1 Sample confirmed 10 distinct spots at 510 nm, 07 distinct spots at 366 nm and 09 spots at 254 nm whereas PR_2 sample confirmed 11 distinct spots at 510 nm, 06 distinct spots at 366 nm and 08 spots at 254 nm. The PR_3 sample confirmed 10 distinct spots at 510 nm, 07 distinct spots at 366 nm and 08 spots at 254 nm.

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Table No. 1: Showing Composition of *Panchavaktra Rasa*

S.N.	Ingredients	Latin Name	Parts Used	Amount
1	*Parada*	Mercury (Hg)	Purified Mercury	30 gm.
2	*Gandhaka*	Sulphur (S)	Purified *Gandhaka*	30 gm.
3	*Vatsanabha*	*Aconitum Chasmanthum*	Root	30 gm.
4	*Tankana*	Borax	Purified *Tankana*	30 gm.
5	*Maricha*	*Piper nigrum*	Fruit	30 gm.
6	*Pippali*	*Piper longum*	Fruit	30 gm.
7	*Dhatura*	*Dhatura Metel*	*Patra Swarasa*	Q.S

Table No. 2: Showing Ayurvedic Properties of ingredients of *Panchavaktra Rasa*

Name of Drug	***Rasa***	***Guna***	***Virya***	***Vipaka***	***Karma***	***Rogaghnata***
Parad	*Shad Rasa*	*Snigdha, Sara, Guru*	*Ushna*	*Madhura/ Katu*	*Tridosaghna*	*Jwara, Krimi, Kustha, Kilash, Prameha*
Gandhaka	*Katu, Tikta*	*Snigdha, Sara*	*Ushna*	*Katu, Madhura*	*Kapha Vatahara, Pittajanana*	*Kandu, Kushtha, Visarpa, Dadru, Krimi, Kasa,*
Vatsanabha	*Madhura*	*Ushna, Ruksha, Tikshna, Laghu, Vikasi, Vyavayi,*	*Ushna*	*Madhura*	*Tridoshahara, Rasayana, Swedala.*	*Sannipata, Vatakaphajvara, Vataroga, Jvaratisar*
Tankana	*Katu*	*Tikshna, Ushna, Laghu, Ruksha*	*Ushna*	*Katu*	*Vata-kapha Shamaka*	*Kasa, Shvasa, Visha, Aadhmana,*
Marich	*Katu, Tikta*	*Laghu, Ruksha, Tikshna.*	*Ushna*	*Katu*	*Kaphavatjit,Vatahara Pittakara, Kaphavatasamaka.*	*Shula, Agnimandya,Adhmana Vatavikara*
Pippali	*Katu*	*Laghu, Snigdha*	*Anusna*	*Madhura*	***Dry Pippali*** *- Kaph vata shamak.* ***Wet Pippali*** *- Pitta shamak.*	*Ama Vata, Amdosha, Jvara. Krimi, Kustha, Pliha Roga*
Dhatura (*Bhawana Dravya*)	*Tikta, Katu*	*Laghu, Ruksha, Vyavayi, Vikasi*	*Ushna*	*Katu*	*Jantughna, Vedanasthapana, Madaka, Kaphahara, Shulaprashamana, Vishahara, Vatahara*	*Shwasa,Parinamashula, Vrikkashula, Ashmari, Kashtartava, Svedadhikya, Yuka, Liksha*

Table No. 3: Showing the physical character of *Ashuddha* and *Shuddha Parada*

Tests	***Asuddha Parada***	***Suddha Parada***
Colour	Dull silver colour	Bright silver colour
Luster	Dull	Shiny
Touch	Smooth	Smooth

Table No.4. Showing the physical characters of *Kajjali*

Test	**Apperence of *Kajjali***
Appearance	Fine Powder
Colour	Black
Touch	Smooth
Smell	No Specific Smell

Table No.5: Showing the physical character of *Ashuddha* and *Shuddha Vatsanabha*:

Tests	***Asuddha Vatsanabha***	***Suddha Vatsanabha***
Appearance	Solid with covering	Solid without covering
Colour	Black , dark brown	Light brown ,whitish
Touch	Hard, Solid	Soft, elastic
Smell	Has characteristic smell	*Tikshna* & *Gomutra* Smell

Table No. 6: Showing removal of foreign matter from crude drugs

S. No.	**Ingredients**	**Total amount**	**Amount after removing foreign matter**	**Amount after powder**	**% loss**
1.	*Maricha*	400g.	390	378	5.5
2.	*Pippali*	400g.	380	370	7.5

Table No. 7: showing observation and results of *Bhawana* of samples *PanchvaktraRas*

Drug	**Amount of *bhawana dravya* added (ml)**	**wt. of sample drug Before bhawana (g.)**	**wt. of sample drug After bhawana (g.)**	**Time taken**	**Colours of sample drug**
PR_1	350	180	214	8 hrs.	Black
PR_2	350	180	213	8 hrs.	Black
PR_3	350	180	214	8 hrs.	Black

Table No. 8: Showing the Organo-leptic characters of the Samples *Panchavaktra Rasa*

Sample	**Appearance**	**Colour**	**Taste**	**Odour**
PR_1	Round shaped hard *vati*	Black	*Katu*	Characteristic
PR_2	Round shaped hard *vati*	Black	*Katu*,	Characteristic
PR_3	Round shaped hard *vati*	Black	*Katu*,	Characteristic

Table No. 9: Showing the results of Hardness, Friability, Disintegration time of *Panchavaktra Rasa*

Parameter	PR_1	PR_2	PR_3
Hardness (kg)	9.82	8.84	9.46
Friability	0	0	0
Disintegration Time	38 min.	41 min.	45 min.

Table No. 10: Showing the results of physicochemical constants for *Panchavaktra Rasa*

Parameter	PR_1	PR_2	PR_3
pH	8.7	8.7	8.7
Loss on Drying	11.6(% w/w)	10.1(% w/w)	12.2(% w/w)
Total Ash	19.17 (% w/w)	16.36(% w/w)	18.62(% w/w)
Acid-Insoluble Ash	1.38(% w/w)	2.55(% w/w)	3.31(% w/w)
Determination of Sulphated Ash	16.36 % w/w	15.65% w/w	16.30% w/w
Water Soluble Ash	6.00(% w/w)	6.77(% w/w)	5.74(% w/w)
Alcohol-soluble extractive	4.75 % w/w	6.05 % w/w	5.55 % w/w
Water-soluble extractive	23.20 % w/w	23.18 % w/w	27.34 % w/w

Table No. 11: Showing Microbiological Analysis of the *Panchavaktra Rasa*

Analysis	PR_1	PR_2	PR_3
Total bacterial count	1100 cfu/g	1500 cfu/g.	1200 cfu/g.
Total Fungal count	<10cfu/g.	<10cfu/g.	<10cfu/g.

Table no.12: Showing results found in ICP-MS Study of *Panchavaktra Rasa*

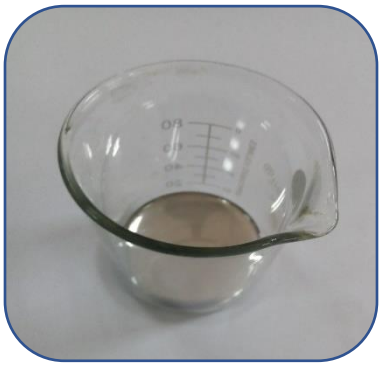
Elements	**PR 1**	**PR 2**	**PR 3**
Lead (as Pb)	ND	ND	ND
Cadmium (as Cd)	ND	ND	ND
Arsenic (as As)	ND	ND	ND
Mercury (as Hg)	4100 PPM	3900 PPM	4300 PPM

Table No. 13: Band visualize at different wavelength in HPTLC Study of *Panchavaktra Rasa*

Sample		254 nm wavelength	366 nm wavelength	510nm wavelength
Panchvaktra Rasa	1.	Band-9	Band-7	Band-10
	2.	Band-8	Band- 6	Band- 11
	3.	Band -8	Band- 7	Band- 10

PHARMACEUTICAL IMAGES

RAW DRUGS



Parada

Gandhaka

Maricha

Pippali

Vatsanabha

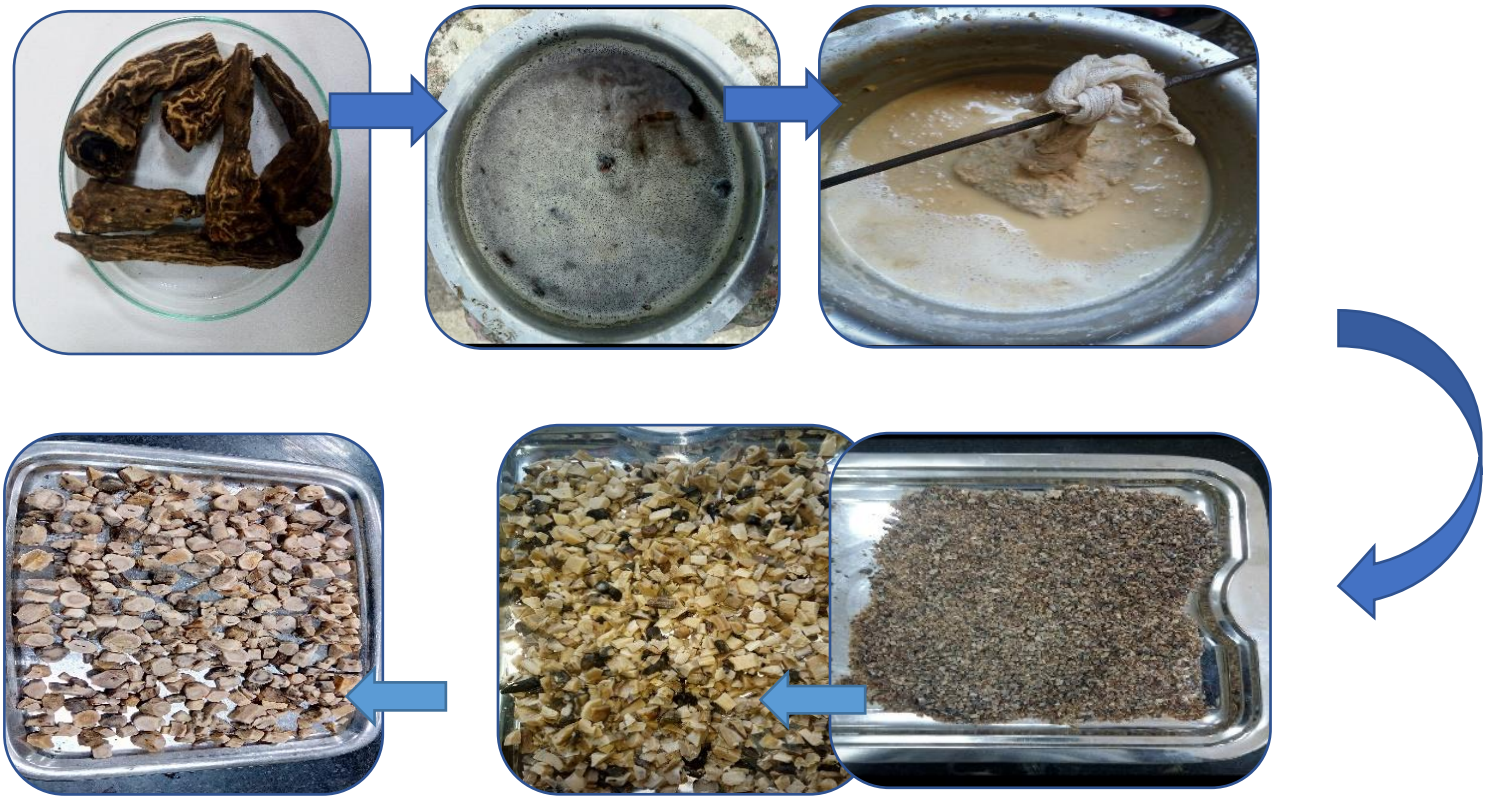
Tankana

Experiment no.1: *Shodhana of Parada*

Experiment no.2: ***Shodhana of Gandhaka***

Experiment no.3: ***Preparation of Kajjali***

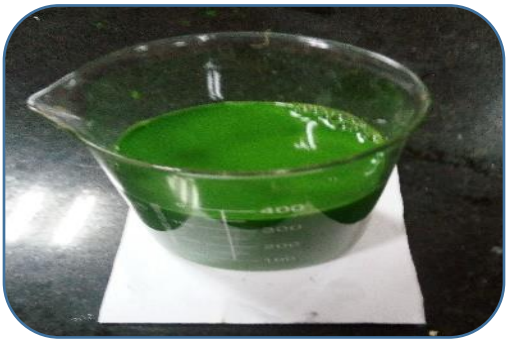
Experiment no.4: ***Vatsanabha Shodhana***



Experiment no.5: ***Tankana Shodhana***

Experiment no.6: ***Preparation of Powder of crude drugs***

Experiment no.7: ***Preparation of Dhatura Patra Swarasa***



Experiment no.8: Preparation of Three Samples of ***Panchavaktra Rasa***

Pippali ***Vatsanabha*** ***Tankana***

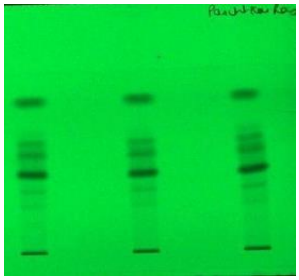
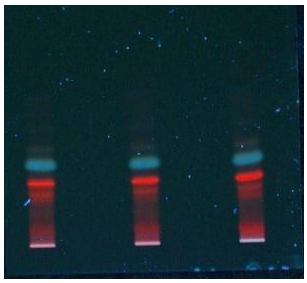
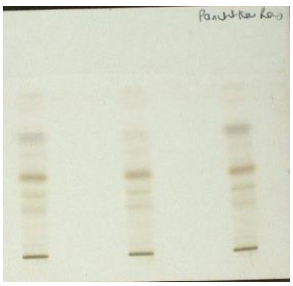



Mixture of all ingredients of *Panchavaktra Rasa* with *Dhatura Patra Swarasa*



PR 1 PR 2 PR 3

HPTLC IMAGES

254 nm 366 nm 510 nm

REFERENCES: