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Research Article

PHARMACEUTICO-ANALYTICAL STUDY OF *CHAUSATHPRAHARI PIPPALI CHURNA*

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ABSTRACT

Ayurvedic pharmaceutics is one of the fastest growing sectors in the world market. Globalization expects pharmaceutical standardization. Competition in pharma industry expects good quality products which have documentation regarding safety and efficacy issues. Ancient heritage blended with current updated pharmaceutical technology helps in better appreciation. *Chausath Prahari Pippali Churna* is a classical *Ayurvedic* formualtion mentioned in *Ayurvedsarasamghraha* a renowned text of Ayurveda, which is useful in *Vata* and *Kapha* diseases. It has potent herbal remedy for both respiratory and digestive disorders. It is prepared by *Bhavana* with *Phanta* (hot infusion) of *Badipippali* to *Chhotipippalichurna* upto 64 *Prahar* (192hrs) to make it more strong and efficient formulation. The attempt is made in the present article to assess its pharmacological action and analytical aspect while processing the drug – *Chausath Prahari Pippali Churna* (CPP).

KEYWORDS: *Chausath Prahari Pippali Churna, Mardana, Bhavana, Phanta, Prahara.*

INTRODUCTION

Chausath Prahari Pippali Churna[1] is one such purely herbal product in *Churna* form used for the management of various diseases. One such ancient *Ayurvedic* preparation that is very frequently used in the field of Ayurveda is *Churna Kalpana* which certainly requires upgradation in the terms of pharmaceutical technology. *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, *Churna* is popularized in the pharmaceutical market.

Churnakalpana is described by almost all the *Acharyas*. Elaborate use of *Churnakalpana* in *Charaka Samhita* reveals the significance of *Churna* preparation in that period[2]. *Acharya Sushruta* has also given prime importance to the *Churna Kalpana* for the purpose of treatment aspects. In *Ashtanga Sangraha*, plants like *Pippali*, *Mustaka, Bharangi* etc. are indicated to be converted in *Churna* form which is administered with *Guda* & *Taila*[3]. In *Ashtanga Hridaya* also a number of *Churna* preparations have been used like *Matulunga, Sunthi, Haritaki* etc. in various ailments[4]. In *Ashtanga Sangraha* & *Ashtanga Hridaya,* there are abundant uses of *Churna Kalpana* in almost all the disease conditions. It can be noted that the use of *Churna Kalpana* became more popular with the advancement of civilization. *Acharya Kashyapa* took a step further ahead and included *Churna* in the basic *Kashaya Kalpanas*[5].

Piper longum linn is one of the important medicinal plant of the family piperaceae. Being one among the constituent of *Trikatu*, *Panchakola* etc, very widely used in Ayurveda for the treatment of various disorders. The *Nirukti* of word *Pippali* signifies its action in maintaining total health and also in *Dhatuposhana* and *Poorana*[6].

In the Ayurvedic Formulary of India, *Pippali* is being used in 324 formulations. It is used as *Prakshepakadravya* in many formulations. It is highly valued from time immemorial because of its vast medicinal properties. It is extensively used as Anti-inflammatory, cough suppressor, antibacterial, insecticidal, antimalarial, CNS stimulant, anti-tubercular, anti- helminthic, hypoglycaemic, antispasmodic, antigiardial, immunomodulatory, hepatoprotective, analeptic, antinarcotic, antiulcerogenic activity.

AIMS & OBJECTIVES OF THE STUDY

1. To prepare *Chausath Prahari Pippali Churna* as per textual guideline followedby S.O.Ps and S.M.P.
2. To determine Physico-chemical analysis of *Chausath Prahari Pippali Churna*.

MATERIALS AND METHODS

- Collection of raw *Chhoti Pippali (Piper longum)* and *Badipippali (Piper longum)* of about one year old sample was procured from pharmacy, National Institute of Ayurveda, Jaipur was identified and authenticated by the Pharmacognosist, for the preparation of *Chausath Prahari Pippalichurna*[7].
- Preparation of *Chausath Prahari Pippali Churna* in the pharmaceutical lab of *Rasa shastra & Bhaishajya* Kalpana, NIA, Jaipur as per the reference of *Ayurved Sara Samghrah.*
- Analytical Study was carried out in S.R. Labs 230/20, Sector-23, Pratap Nagar Haldighati Marg, Jaipur, Rajasthan.

Pharmaceutical Methods

All the samples of *Chausath Prahari Pippali Churna* were prepared inpharmaceuticallab of Department of *Rasashastra* and *Bhaishajya Kalpana*, National Institute of Ayurveda, Jaipur. Prior to the pharmaceutical processing, the raw *Pippali* was washed, cleaned and dried properly to remove the contamination of chemicals, pesticides and heavy metals, if any remains in the raw drug[8].

The whole pharmaceutical study was carried as mentioned below:-

Formulation Details

The preparation of *Chausath Prahari Pippali Churna* involves the following steps:

1. Preparation of *Pippali Churna*
2. Preparation of *Badipippali Phanta*
3. Preparation of *Chausath Prahari Pippali Churna*
4. Storage of Finished product

Preparation of *Pippali Churna*

Dried fruits of *Pippali* were sorted from impurities like small stones, foreign matter etc.

As per API norms, raw *Pippali* was washed under running tap water for three times to remove the external impurities, chemicals, pesticides and heavy metals, if any remains in the raw drug. After properly drying the *Pippali* was then weighed and transferred into a mixer grinder and rotated for10min.The powder was collected and sieved through 85#. The remaining powder was again grinded in a mixer and sieved.

Preparation of *Badi Pippali Phanta*

Dried fruits of *Badi Pippali* were sorted from impurities like small stones, foreign matter etc. As per API norms, raw *Badi Pippali* was washed under running tap water for three times to remove the external impurities, chemicals, pesticides and heavy metals, if any remains in the raw drug. After properly drying the *Badi Pippali* was then weighed and transferred into a *Khalvayantra* and grinded for 10minutes. The Coarse powder was collected and sieved through 44 No. mess size. The *Phanta* preparation was prepared by adding 4 parts of 'hot water to the 1 part of 'coarse powdered drug'. The mixture has to be macerated well for 5 min Later the liquid was Strain and press out the marc (dense stuff). After that mixture has to be filtered well into the glass container the filtered is called *Phanta and* this freshly prepared filtered *Phanta* was further used for *Bhavana*.

Preparation of *Chausath Prahari Pippali Churna*

359.4 g. *Pippalichurna* was taken in a wet-grinder and the same quantity of *Phanta* was added to it. During first *Bhavana* 125ml extra water was added for smooth paste and grinding was carried out for 64 *Prahara* i.e., 192 hrs. After grinding on first *Bhavana* when paste became thick and rpm of the wet-grinder decreased to 100 rpm, then again quantity of 150 ml *Phanta* was added on every 2 *Prahar* i.e., 6 hrs. So, grinding for 64 *Prahar* total 32 numbers of *Bhavna* of *Phantadrava* has been given to the *Pippalichurna*, samples were collected at stages of 16, 32, 48 and 64 *Prahara* for comparative study with the finished product (shown in Table 3.8).

Storage of Finished Product

Dry the final product in shade and Filling in the air tight container.

Table 1: Showing practical details of *Pippalichurna*

Quantity of raw *Pippali* taken	Quantity of Fresh *Pippali* obtained	Quantity of Rotten/defected *Pippali* obtained	% Loss
500 g	419 g	81 g	16.2 %

Table 2: Showing practical details of *Pippali churna*

Quantity of Fresh *Pippali* taken	Quantity of *Pippalichurna* obtained	Residue	Handling loss	% Loss
419 g	359.4 g	49.4 g	10.2 g	14.23 %

Table 3: Showing practical details of *Badi Pippali Phanta Churna*

Quantity of raw *Badi Pippali* taken	Quantity of Fresh *Badi Pippali* obtained	Quantity of Rotten/ defected *Badi Pippali* obtained	Loss in %
1kg	907 g	93 g	9.3%

Table 4: Showing practical details of *Badi Pippali Phanta Churna*

Quantity of Fresh *Badi Pippali* taken	Quantity of *Badi Pippali* obtained	Residue	Handling loss	Loss in %
907 g	862 g	32 g	12.2 g	4.87 %

Table 5: Showing practical details of *Badi Pippali Phantadrava* for *Bhavana* purpose

Quantity of Fresh coarse powdered *Badi Pippali* taken	Quantity of hot water added to the *Badi Pippali churna*	Quantity of *Badi Pippali phanta drava* obtained	loss	Loss in %
50 g	200 ml	150 ml	50 ml	25 %

Table 6: Showing details of ingredient of the *Chausath Prahari Pippali Churna*

Ingredient required	Botanical Name	Part used	Quantity
Pippali Churna	*Piper longum* Linn.	Fruits	359 g
Badi Pippali Phanta	*Piper longum* Linn.	Fruits	359 ml

Table 7: Showing results for preparation of *Chausath Prahari Pippali Churna*

Bhavana dravya	*Prahara*	Qty of liquid used in ml	Total Qty of Liquid used	Qty of *Pippali Churna* taken	Material obtained	After drying	Gain in %
Phanta media	16	1350	4800ml	359 g	653 g	507 g	41.22 %
	32	1200					
	48	1200					
	64	1050					

Analytical Methods

- **Organoleptic parameters:** The specific characters which are mentioned in our classics for evaluating the qualities of *Churna* by colour, touch, fineness, taste, odour etc. was noted in the sample. *Rupa* (Appearance & color), *Sparsha* (Touch) - Soft particles that could be detected by touch, *Gandha* (Odour)-Specific odour, *Rasa* (Taste)- Specific taste.
- **Physicochemical parameters:** Physicochemical study of all the samples were carried out by using various physiochemical parameters as mentioned in Ayurvedic Pharmacopoeia of India, Indian Pharmacopoeia.

  HPLC- qualitative and quantitative analysis of Piperine, Particle Size, Total ash, Acid insoluble ash, pH, Water soluble extractive, Alcohol soluble extractive, Loss on drying at 105°C.

Table 8: Organo-Leptic Evaluation of *Chausath Prahari Pippali Churna* at Different Stages

Bhavana dravya	*Prahara*	Appearance	Colour	Smell	Taste
Phanta media	0	Fine Powder	Green	Strong Pungent	Pungent +++
	16	Fine Powder	Light Brown	Strong Pungent	Pungent +++
	32	Fine Powder	Brown	Mild Pungent	Pungent++
	48	Fine Powder	Dark Brown	Mild Pungent	Pungent ++
	64	Fine Powder	Dark Chocolate Brown	Mild Pungent	Pungent+

Table 9: Physico-Chemical Analysis of *Chausath Prahari Pippali Churna* and *Pippali Churna*

S.No.	Name of Test	Batch	0 *Prahara*	16 *Prahara*	32 *Prahara*	48 *Prahara*	64 *Prahara*
1.	Loss on drying (w/w %)	PC	15.84	-	-	-	-
		CPP	-	10.86	10.35	12.41	16.07
2.	Total Ash Value (w/w %)	PC	7.76	-	-	-	-
		CPP	-	9.17	10.08	10.48	11.57
3.	Acid Insoluble Ash (w/w %)	PC	0.199	-	-	-	-
		CPP	-	0.199	0.299	0.195	0.199
4.	pH Value	PC	4.0	-	-	-	-
		CPP	-	4.5	4.5	5.1	5.0
5.	Water soluble extract (w/w %)	PC	32.6	-	-	-	-
		CPP	-	47.70	60.00	58.42	57.30
6.	Alcohol soluble extract (w/w %)	PC	26.6	-	-	-	-
		CPP	-	31.2	32.1	32.3	20.0

PC = *Pippali Churna*, CPP = *Chausath Prahari Pippali Churna*

Table 10: Particle Consistency of *Chausath Prahari Pippali Churna* and *Pippali Churna*

S.No.	Name of Test	Batch	0 *Prahara*	16 *Prahara*	32 *Prahara*	48 *Prahara*	64 *Prahara*
1	% of Moderately Coarse Powder	PC	90.48	-	-	-	-
		CPP	-	8.69	0.40	0.45	0.76
2	% of Moderately Fine Powder	PC	8.54	-	-	-	-
		CPP	-	57.65	60.35	60.50	64.81
3	% of Fine Powder	PC	0.0	-	-	-	-
		CPP	-	29.11	29.25	28.42	26.42
4	% of Very Fine Powder	PC	0.0	-	-	-	-
		CPP	-	6.53	6.85	6.90	7.01

PC = *Pippali Churna*, CPP = *Chausath Prahari Pippali Churna,*

Table 11: Showing Area of Piperine Content in HPLC (AT 345 nm)

S.NO.	Con. (mg/kg)	Area	Retention Time	Peak
1.	0.5	39477	2.456	1
2.	1	65171	2.468	1
3.	2.5	153069	2.469	1
4.	5	301709	2.429	1
5.	10	613064	2.416	1
6.	30	1879214	2.453	1
7.	50	3167357	2.445	1

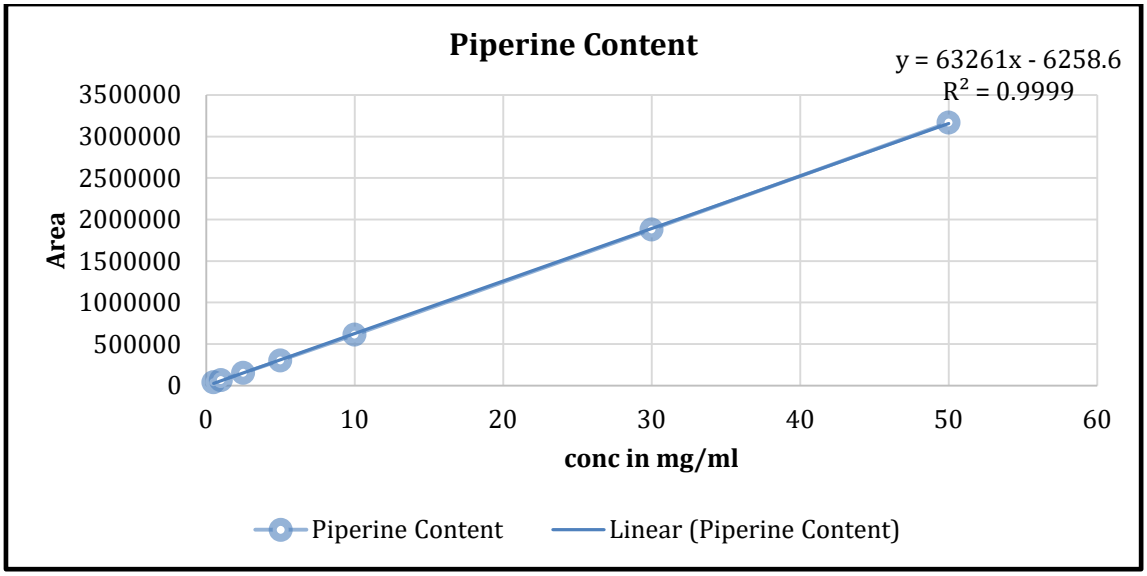

Fig. No.- 1 A linear Graph showing Piperine Content

Sample- *Pippali*
Area- 2830104
Observed concentration from calculated curve- 44.836
Dilution (mg/100ml)
Sample weight- 500.45 mg
Applied concentration In mg/kg
Calculation
Piperine Content

$$\% = \frac{\text{Observed concentration from calculated curve} * \text{Purity of standard}}{\text{Applied concentration}}$$

Piperine %= 0.89

HPLC:

HPLC for Methanolic Extract of *Pippali Churna* and *Chausath Prahari Pippali Churna* with comparison to standard Piperine. The mobile phase consisted of solvent A: B [80:20].
Solvent A is Methanol and solvent B is water.

DISCUSSION

- *Pippali* is one such established drug which has multiple pharmacological actions. But to get the optimum effect in small dose is the aim of *Bhaishajya Kalpana*. For this reason may be *Chausath Prahari Pippali Churna* came into vogue, where *Pippali* just by doing *Mardana* for 64 *Prahara* attains a potent effect against the diseases. How just simple rubbing brings such tremendous change in a drug always fascinated the researchers all over the globe. Keeping this view in mind the preparation of *Chausath Prahari Pippali Churna* was carried out by *Mardana* and *Bhavana* processes and to affirm the role of *Mardana* and *Bhavana* processes in such pharmaceutical preparations. The average size of *Pippali* was 17.93mm and average weight of *Pippali* – 0.243gm was taken for making *Churna*. Prior to making the *Churna*, physical impurities from the raw drug were removed and was thoroughly washed under running water for three times so, as to remove the external impurities, chemicals, pesticides and heavy metals, if any remains in the raw drug. After properly drying the *Pippali* was then weighed and transferred into a mixer grinder and rotated for 10 minutes to make powder. Then the powder was collected and sieved through # 85 mesh.
- Initially the raw material was found easy to powder, which gradually became difficult to powder at the end. Because after certain extent when mixer-grinder became hot and the residual powder in it became hard like granules, it was impossible to further powder it. Hence, rest of the coarse powder was discarded. Quantity of Fresh *Pippali* taken for making *Churna* was 419gm. An average of 14.23% of loss was obtained.
- The average size of *Badi Pippali* was 25.43mm in length and average wt. of *Badi Pippali*– 0.431gm was taken for making *Churna*. Prior to making the *Churna*, physical impurities from the raw drug were removed and was thoroughly washed under running water for three times so as to remove the external impurities, chemicals, pesticides and heavy metals, if any remains in the raw drug.

- After properly drying the *Badi Pippali* was then weighed and transferred into *Khalvayantra* and grinded for 10minutes to make coarse powder. Then the coarse powder was collected and sieved through # 44 mesh. Remaining *Badi paippali* was again grinded in a *Khalvayantra* and sieved. Quantity of Fresh *Badi Pippali* taken for making coarse powder was 907gm.
- 359gm of *Pippali churna* was taken for preparing *Chausath Prahari Pippali Churna*.
- To assess the effect of *Mardana* and *Bhavana* processes, the samples were collected at 16, 32, 48 and 64 *Prahara* and were analyzed.
- The *Phanta* media was used to make *Chausath Prahari Pippali Churna.*
- **Instrument used:** Wet Grinder of Butterfly Matchless Table Top wet grinder, with 2 cylindrical Roller Stone having weight: 4.3Kg, with Stainless Steel Jar having capacity of 2 l, with Dimensions of 7.2 inch deep & Diameter of 10.2 inch. Rpm of Wet grinder was 297/ min.
- 359.4gm *Pippali churna* was taken in a Wet-grinder and 359.4ml quantity of *Badi Pippali phanta* was added to it. Grinding was carried out for 64 *Prahara* i.e., 192 hours. When paste became thick and rpm of the wet-grinder decreased to 100 rpm, required quantity of *Phanta* was added to the material.
- During *Mardana* for 64 *Prahara*, in between samples were collected at stages of 16, 32, 48 and 64 *Prahara*, for comparative study with the finished product.
- Colour of *Pippali churna* slowly turned to darker colour with increasing *Mardana* period.
- After grinding all the samples were taken out and dried under shade.
- The final product was difficult to powder after drying because it was very sticky.
- To prepare 359.4 g of drug 359 ml of *Phanta* was added but given quantity of *Phanta* according to reference was unable to make a proper paste for smooth grinding, so 125ml of extra water was added.
  - For first 16 *Prahara mardana* it required 1350ml of *Phanta*,
  - For 16-32 *Prahara mardana* required 1200ml of *phanta*,
  - For 32- 48 *Prahara mardana* it required 1200ml of *Phanta*,
  - For 48-64 *Prahara mardana* it required 1050mlof *Phanta*,
- So it can be seen that it required more *Phanta* for first 16 *Prahara* because initially the *Churna* required more liquid to become moist and to turn into paste. Later on for 32 *Prahara*, 48 *Prahara* and 64 *Prahara* it required comparatively less quantity of *Phanta* for *Mardana*.
- A gain of 41.22% was observed. This gain was due to the addition of water soluble extract of *Badi Pippali phanta* to the material which has increased the weight of final quantity.
- 0 *Prahari Pippali* i.e., *Pippali churna* was common as an initial drug for the preparation of *Chausath Prahari Pippali Churna.* It was sieved through #85 mesh, so was fine in touch. Freshly powdered *Pippalichurna* was light green in colour, had strong pungent smell and very strong pungent taste (as shown in Table XIII). In different stages, after 16, 32, 48 and 64 *Prahara* of *Mardana* the collected samples were completely dried under shade and rotated in mixer-grinder for 10 minutes to get these in *Churna* form and sieved through #85 mesh to get uniform *Churna*. That is why all the samples appeared in fine powder form. In different stages of sample smell of *Pippali* was strong pungent which got diminished gradually after 32, 48 and 64 *Prahara mardana*. This may be due to breakdown of its chemical components and by *Mardana* its volatile part may have evaporated with increasing *Mardana* period the strong smell gradually became mild. 0 *Prahari Pippali (Pippali Churna)* had strong pungent with instant burning tingling taste, which was found gradually decreasing in 16, 32, 48 and 64 *Prahari Pippali churna*. The tingling sensation is observed delayed but strong in all the samples of finished product as compared to *Pippali churna* which may be due to the exposed cellular content caused by the prolonged *Mardana* of *Pippali*. Regarding colour, *Pippali churna* which was light green colour turned slowly to dark brown, and dark chocolate brown at different stages of *Mardana*. This change in colour is may be due to prolong triturition of *Pippali*. As it is known that during *Mardana* (trituration), a mild heat is generated due to friction which darkens the grinding matter and the breakage of cellular content of the drug may be causing the change in colour.

Physico-Chemical Parameters

Loss on Drying (LOD)

The loss on drying of any sample is directly related to its moisture content. If the moisture content is very high in any drug it may affect its preservation. Hence, the loss on drying of the sample was determined and as data shown in Table-IX. It was found that *Pippali churna* (PC) had 15.84% loss on drying. In CPP *Churna* which had increase in loss

of drying by 16.07%. This may be due to the presence of sticky alkaloid present in *Pippali Phanta* which may be hindering the complete drying of the final product and increases the moisture content.

Ash Value

Data pertaining to Ash value of raw *Pippali churna* and finished product, i.e., CPP *Churna* has been tabulated in Table 11. Which shows Ash value of PC as 7.76% w/w which significantly increased to 11.57% w/w in CPP *Churna*. This may be probably due to the presence of some inorganic contents incorporated due to the prolong trituration of *Pippali churna* in the stone roller mortars. The total ash usually consist mainly carbonates, phosphates, silicates and silica. The total ash figure is of importance and indicates to some extent the amount of care taken in the preparation of the drug.

pH

As per the data shown in Table-9, pH value of PC was found to be 4.0. Acidic pH slightly reduced within the range of 4.5 to 5.0 subsequently in all the stages of CPP *Pippali churna*. Thereby it indicates that the *Tikshnata* of *Pippali* is reduced due to prolonged *Mardana*. Solubility, stability, activity and absorption of a drug depend upon its pH. The pH of CPP *Churna* indicated that it is slightly acidic. The degree of ionization and lipoid solubility of a drug are two important factors that determine the rate of absorption of drugs from GI tract, and indeed their passage through cellular membranes easily.

Acid Insoluble Ash

If the total ash is treated with dilute hydrochloric acid, the percentage of acid-insoluble ash may be determined. As shown in Table-9. Acid insoluble ash was found to be 0.199% w/w in PC. It remained constant in CPP *Churna*. Acid insoluble ash usually consists mainly of silica. A high acid-insoluble ash in drugs indicates contamination with earthy material and may be fine particles from grinding stones possibly got mixed with the drug during prolonged *Mardana.*

Water Soluble extract

Extractive values for water soluble were shown in the Table-9. It was found that water soluble extract in PC was 32.6% w/w which gradually increased in the CPP *Churna* to 57.3%. Increase in water soluble extract in CPP *Churna* may be due its processing method where with liquid media was used.

Alcohol Soluble Extract

Data pertaining to Alcohol soluble extract of the all stages have been tabulated in Table no-9 which revealed that in PC it was 26.6% w/w which got reduced in different stages 16, 32, 48, and 64 *Prahara*, by 31.2%, 32.1%, 32.3% and 20.0% respectively. This may be due to some change in their chemical nature attained by the virtue of *Mardana* process.

Particle Consistency

Estimation of particle consistency of raw drug *Pippali churna* and the prepared drugs of different stages of CPP *Pippali churna* was also carried out which is tabulated in Table no-10. In PC maximum part i.e., 90.48% was in moderate coarse powder form. Whereas in CPP at 64 *Prahara*, the particle size remarkably reduced to fine or very fine particle size viz. 26.42% and 7.01% respectively. This suggests that due to the prolonged *Mardana* process the particle size definitely reduces in the final product.

HPLC

The HPLC finger prints of the CPP *Churna* have been presented in fig.no.9. The mean of total area of Piperine content in HPLC samples at 345 nm wavelengths have been tabulated in Table no. 11.

In Table 11 it is evident that the mean of total area of piperine in CPP *Churna* was 2830104. The data of HPLC of the CPP *Churna* and *Pippali churna* prepared samples were run parallel with standard marker Piperine and all the corresponding spots were recorded at 345nm wavelengths at 0.05, 1, 2.5, 5, 10, 30, 50 ppm.

Quantitative assessment of piperine content in CPP *Churna* was found to be 0.89% w/w.

CONCLUSION

The following conclusions were drawn from the present article:

1. In preparation of *Chausath Prahari Pippali Churna* the quantity of liquid i.e., *Badi Pippali Phanta* was used 4800ml for 359gm of *Pippali Churna*. Total 41.22% wt. was gained in final product.
2. In Organoleptic study at different stages of sample the smell of *Chausath Prahari Pippali Churna* was found pungent which got diminished gradually after 32, 48 and 64 *Prahara mardana*. This may be due to breakdown of its chemical constituents and its volatile part may have evaporated with increasing trituration period.
3. In Physico-chemical analysis it showed decrease in average loss on drying in *Chausath prahari Pippali churna* at different stages. Ash value, Acid insoluble ash, Water soluble extractives and Alcohol soluble extractives increased gradually in all samples as compared to *Pippali churna*. The pH value of *Pippali churna* was found 4.0 which is acidic in nature further in successive stages of *Chausath Prahari Pippali Churna* preparation pH increases in the range of 4.4 to 5 which indicates

the *Tikshnata* of *Pippali* was reduced due to prolonged trituration.

4. In HPLC analysis, Piperine content was found 0.89% w/w in final product.
5. The analytical parameters were within the parameters mentioned in the API and were suggestive of the genuinity of the raw material used and the quality of the end product obtained.

Fig.No.1 *Pippali*

Fig.No. 2 *Badi Pippali*

Fig.No.3 *Pippali* Fine Powder

Fig.No.4 *Badi Pippali* Coarse Powder

Fig.No.5 *Badi Pippali Phanta Drava*

Fig.No.6 Wet Grinder

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