



PHARMACEUTICO-ANALYTICAL AND EXPERIMENTAL STUDY OF ANANDABHAIRAVA RASA IN APASMARA W.S.R TO ANTI-CONVULSANT ACTIVITY

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ABSTRACT

Anandabhairava Rasa¹ is a classical Kharaliya Rasayana described in Bhaishajya Ratnavali for the management of Apasmara. 12 formulations of Ananda bhairava Rasa is mentioned in different classical text. The formulation consists of Shuddha Hingula, Shuddha Vatsanabha, Trikatu, Shuddha Tankana, and Shuddha Gandhaka, processed with Jambheera Swarasa Bhavana according to classical Ayurvedic pharmaceutical principles. Apasmara is a neurological disorder described in Ayurveda, characterized by recurrent episodes of loss of consciousness and abnormal movements, and is correlated with epilepsy in contemporary medicine.

The present study aimed to evaluate the pharmaceutical preparation, analytical standardization, and experimental anticonvulsant activity of Anandabhairava Rasa. The formulation was prepared following classical Shodhana procedures for individual ingredients and subjected to Ayurvedic and modern analytical evaluations, including physicochemical analysis, XRD, FTIR, and SEM-EDS. The anticonvulsant activity was assessed in Swiss albino mice using Maximal Electroshock Seizure (MES) and Pentylene tetrazole (PTZ) kindling models.

The prepared formulation exhibited acceptable pharmaceutical characteristics and complied with classical standards. Analytical investigations confirmed its stable herbomineral nature and demonstrated the presence of both phytoconstituents and mineral components. Experimental evaluation showed a significant reduction in the duration and severity of seizures in both MES- and PTZ-induced convulsion models compared with the control group, indicating promising anticonvulsant activity.

The study concludes that Anandabhairava Rasa can be successfully prepared according to classical Ayurvedic methods with appropriate purification of ingredients. Analytical findings support the quality and safety of the formulation, while experimental results validate its anticonvulsant potential. These findings suggest that Anandabhairava Rasa may serve as an effective Ayurvedic therapeutic option for the management of Apasmara, although further pharmacological and clinical studies are required to establish its efficacy and mechanism of action.

KEY WORDS: Ananda Bhairava Rasa, Anti- Convulsant Activity, Apasmara, Supra Maximal Electric Shock Induced Seizure, Pentylene Tetrazole Kindling Induced Seizure, Swiss Albino Mice.

1) INTRODUCTION

Ayurveda emphasizes health through equilibrium of body, mind, and spirit. Rasashastra utilizes herbo-mineral formulations known for rapid action, low therapeutic doses, prolonged shelf life, and enhanced bioavailability. Apasmara is an Ayurvedic disorder characterized by impairment of Smriti, Dhi, Dhriti, and Sattva with recurrent loss of consciousness and abnormal movements, resembling epilepsy. Ananda Bhairava Rasa, a classical Kharaliya Rasayana described in Bhaishajya Ratnavali, contains Shuddha Hingula, Vatsanabha, Gandhaka, Tankana, and Trikatu, processed with Jambheera Swarasa. It is traditionally attributed with Deepana, Pachana, Yogavahi, Rasayana, Vishaghna, and Medhya properties. However, scientific evidence

regarding its pharmaceutical standardization, analytical characterization, and anticonvulsant efficacy remains limited. Therefore, the present study was undertaken to evaluate its pharmaceutical preparation, analytical profile, and anticonvulsant activity, providing scientific evidence for its traditional use in Apasmara.

2) AIMS AND OBJECTIVES

- Aim :** Pharmaceutico-Analytical and experimental study to evaluate Anti-convulsant activity of Ananda bhairava Rasa.
- Objective :**
The present study was undertaken to prepare Ananda Bhairava Rasa according to classical references, evaluate its



physicochemical characteristics, and assess its anticonvulsant activity experimentally.

c) **Formulation review**

हिङ्गुलञ्च विष व्योष टङ्कणं गन्धक समम ।

जम्बीर रस संयुक्तं मर्दयेत यामकद्वयम् ।।

कासश्वास अतिसारेणु ग्रहण्या सन्निपातिके ।

अपस्मारेऽनिले मेहे आपयाजीरणे वहनीमाद्यके ।।

गुग्गुमात्रः प्रदातव्या रस आनन्दभैरवः । - Bhaishajya Ratnavali ,vol 01,6/76-78

3) MATERIALS AND METHODS

Table no.01 : Showing Ingredients of Ananda bhairava rasa:

Sl.no.	Ingredients	Chemical name/botanical name	Chemical formula/part used	Quality
01	<i>Shuddha Hingula</i>	Cinnabar	HgS	1 part
02	<i>Shuddha Vatsanabha</i>	<i>Aconitum ferox</i>	Root	1 part
03	<i>Shunti</i>	<i>Zingiber officinale</i>	Rhizome	1 part
04	<i>Maricha</i>	<i>Piper nigrum</i>	Fruit	1 part
05	<i>Pippali</i>	<i>Piper longum</i>	Fruit	1 part
06	<i>Shuddha Tankana.</i>	Borax	Na ₂ B ₄ O ₇ .10H ₂ O	1 part
07	<i>Shuddha Gandhaka</i>	Sulphur	S	1 part

Procedure: Fine Powders of all the above ingredients is to be mixed and trituration is done until homogeneous mixture is obtained. This homogeneous mixture is subjected to 1 bhavana of *Jambeera swarsa* for 2 yama then vati of 1 *gunja* is prepared and dried under shade.

Dose: 1 *gunja*.(125mg)

Indication: *Apasmara, Jwaratisara, Grahani, Shwasa, Kasa, Vataja Prameha.*

Table no.02 : Showing Pharmacotherapeutic Properties of Ingredients

Drug	Rasa panchaka	Karma / Pharmacotherapeutic Actions	Dose	Important Yogas
Vatsanabha	Rasa: MadhuraGuna: Laghu, Rooksha, Teekshna, Vyavayi, VikasiVeerya: UshnaVipaka: Katu	Vatakaphahara, Rasayana, Deepana, Balya, Brimhana	1/6–1/8 Ratti	Tribhuvanakirti Rasa, Mrityunjaya Rasa, Ananda Bhairava Rasa, Sanjivini Vati
Shunthi	Rasa: KatuGuna: Laghu, SheethaVeerya: UshnaVipaka: Madhura	Agni Deepaka, Ruchya, Shoolaghna; Kaphavata Shamaka	1–2 g	Trikatu Churna, Saubhagya Shunthi Paka, Shothaghna Lepa, Ardraka Ghrita
Maricha	Rasa: KatuGuna: Laghu, Teekshna, Veerya: Ushna, Vipaka: Katu	Rochana, Deepana, Pramathi, Shwasa-Kasahara; Kaphavatahara	0.5–1 g	Marichadi Vati, Tribhuvanakirti Rasa, Chandraprabha Vati
Pippali	Rasa: KatuGuna: Laghu, Snigdha, TeekshnaVeerya: UshnaVipaka: Madhura	Deepaka, Ama Pachaka, Rasayana, Aruchi-hara, Mastishka Daurbalya-hara, Shoolaprashamana, Medhya, Vatanulomana, Balya; Kaphavataghna	0.5–1 g	Trikatu Churna, Guda Pippali
Tankana	Rasa: Katu, KsharaGuna: Ushna, Rooksha, Teekshna, SaraVeerya: UshnaVipaka: Amla	Lekhana, Agnikara, Balya, Kapha Vishleshana, Hridya, Rechana; Vatakaphaghna	1–2 Ratti (≈125–250 mg)	Rajapravartini Vati, Trailokya Chintamani Rasa, Tankanamrita Malahara, Kaphaketu Rasa
Gandhaka	Rasa: Madhura, Katu, Tikta, KashayaGuna: Ushna, Sara, SnigdhaVeerya: UshnaVipaka: Katu	Deepana, Pachana, Vishahara, Shiroadahara, Viryavardhaka, Shoshana, Amadoshahara; Kaphavatahara, Pittavardhaka; Rasayana	1–8 Ratti	Gandhaka Rasayana, Gandhakadya Malahara, Rasa Sindura, Panchamrita Parpati



Table no. 03: showing different references for ABR

Si. No:	Ingredients	Bhavana Dravya	Matra	Anupana	Indication	Ref
1	Hingula, Vatsanabha, Maricha, Pippali, Tankana-all in equal parts.	Jambeera Swarasa	1-2 gunja. 1/2gunja,1/2-1gunja.	Madhu & Kutaja Twak churna	Tridoshaja atisara	R.ch,R.S am,BR RJN
2	Hingula, Vatsanabha, Trikatu, Tankana, Gandhaka-all in equal parts.	Jambeera rasa bhavana for 2 yama	1 gunja		Jwaratisara, Grahani Shwasa, Kasa, Apasmara Vataja Prameha	R.ch BR R.S.S
3	Hingula, Vatsanabha, Trikatu, Maricha, Pippali, Tankana, Javitri -all in equal part	Jambeera rasa	1 Ratti	Ardra Swarasa	Ashthavidha Jwara,Jeerna Jwara,Amavata.	R.S.S
4	Hingula-2parts, Vatsanabha - 1 part. Maricha- 4 parts Pippali-2 parts.	Nimbu swarasa 7 times.			Jwaratisara	SBM
5	Hingula, Vatsanabha, Maricha, Pippali,Tankana	Jala	½ Ratti		Pravahika,puyameha	RT
6	Hingula (4), Vatsanabha (7), Pippali (7), Tankana (8)	Ardra swarasa	1 Ratti		Sannipata Jwara	R.Y.S
7	Vangabhasma, Swarnabhasma, Parada		2 ratti	Madhu and Gunjamoola	Prameha	R.Y.S
8	Parada, (Gandhaka, Loha bhasma, Abharka bhasma, Vatsanabha, Maricha, 8 part of Hg) Tankana (4)		2 ratti	Tambula patra rasa	Vata Kapha, Jwarahara,Mandagni hara, Aruchi	R.Y.S
9	Parada, Gandhaka, Manashila, Vatsanabha. Hingula, Kantaloha bhasma, Abhraka bhasma, Tamra bhasma, Loha bhasma. Haratala bhasma, swarnamakshika all are equal quantity. Only Gandhaka should be taken double quantity of Parada	2 bhavana of each Amlavetas, Jambeera, Nirgundi, Changeri, Hastishundi rasa	1 masha		Mandagni	R.Y.S
10	Brihati, Ela, Shunti, Maricha-4parts,Vatsanabha 1/4th Part of Ela	Nagavalli rasa, Ardra Swarasa and nimbu rasa each of 3 bhavana	3 ratti		Sanipata Jwara, Vata shleshma Maha roga, Jwara, Mastaka graha.	R.Y.S
11	Tankan, Hingula, Gandhaka, Parada, Haratala, Vanga bhasma, Tamra bhasma and Naga bhasma all equal quantity	Triphala kwath bhavana. swedan in in dola yantra parpata kwath 1 day after that bhavana of snake bite	1 ratti	Takra	Sannipata Jwara, Sheeta roga	R.Y.S
12	Hingula, Vatsanabha, Gandhaka, Trikatu, Tankana, Vacha, Yastimadhu, Chitraka, Saindhava, Vijaya bija, Dhatura beeja all are taken in equal quantity		1 gunja		Vatapitta Rogahara, specially Gulma, Atisara and Sannipata jwara and mandagni	R.Y.S



Experimental study

Evaluation of Anti-convulsant activity by Supra- maximal Electric Shock induced convulsion in Swiss albino Mice.

1) SUPRA-MAXIMAL ELECTRIC SHOCK METHOD:

Albino Mice of 4 group, each group have 6 mice with either sex weighting between 20-35g ,subjected them to Supra Maximal

electric shock (MES) of 150 to 180 mA for 0.2 sec duration after 1 hr of administration of ABR and Diazepam.

In the present study evaluation of ABR on Anti-convulsant activity was carried out using Electric shock method induced convulsions models in swiss albino mice.

Treatment protocol:

Table No.04: Showing the treatment protocol MES model

Group	Group name	Treatment	Dose	Frequency	Duration
01	Normal control	Normal diet and tap water	Saline	Daily	10 days
02	Positive control	Supra- maximal Electric Shock	150 to 180 mA for 0.2 sec	6th day	10 days
03	Induced epileptic convulsion Standard drug: Diazepam	Supra- maximal Electric Shock	150 to 180 mA for 0.2 sec	6th day	10 days
		Diazepam	5mg/kg BW	Daily	
04	Induced epileptic convulsion Test drug : ABR	Supra- maximal Electric Shock	150 to 180 mA for 0.2 sec	6th day	10 days
		ABR	0.020mg/kg BW	Daily	

2) PTZ KINDLING METHOD

For kindling induction, Pentylene tetrazol (PTZ) would be freshly dissolved in normal saline and a sub-convulsive dose (40 mg/kg) would be administered every other day, for a total of around 11 injections .

In the present study evaluation of ABR on Anti-convulsant activity was carried out using PTZ kindling injection method induced convulsions models in mice.

Table No.05 : Showing the treatment protocol PTZ model

Group	Group name	Treatment	Dose	Frequency	Duration
01	Normal control	Normal diet and tap water	Saline	Daily	22days
02	Positive control	Pentylenetetrazol inj	40mg/kg BW	Alternate day	22 days
03	Induced epileptic convulsion Standard drug: Diazepam	Pentylenetetrazol inj	40mg/kg BW	Alternate day	22days
		Diazepam	5mg/kg BW	Daily	
04	Induced epileptic convulsion Test drug : ABR	Pentylenetetrazol Kindling inj	40mg/kg BW	Alternate day	22days
		ABR	0.020mg/kg BW	Daily	

4) RESULTS

a) Pharmaceutical Study Results

Table No.06: Showing results of Ananda bhairava Rasa

Ingredients	Quantity of Ashodhita vatsanabha taken	Quantity of Shodhita vatsanabha obtained	Loss	Yield %
Vatsanabha	250gms	200gms	150gms	80%
Tankana	250gms	110gms	140gms	44%
Hingula	100gms	135gms	16 gms	95.5%
Gandhaka	200 gms	164 gms	36 gms	82%
Trikatu	150gms	141gms	29gms	86%
ABR	250 gms	228 gms	22gms	91.2%



b) Analytical Study Results

PHYSICAL TESTS
ORGANOLEPTIC CHARACTERS

Table No.07: Showing organoleptic characters of ABR

Physical test	ABR
Colour	Reddish
Odour	Characteristic
Taste	Astringent
Touch	Hard
Appearance	Tablet

Table No.08: Showing results of pH, Ash value, Acid insoluble ash, Water soluble ash and loss on drying at 105°C.

Parameters	ABR
pH Value	6.7
Ash Value	32.5%
Acid Insoluble Ash	18.5%
Water Soluble Ash	82.5%
Loss on drying at 105°C	9%

MICROBIAL LIMIT TEST

Total fungal count

Table No.09 : showing results of Total fungal and bacterial count

Sl.no	Samples	Dilutions	Colony forming Units/ml
01	Ananda bhairava rasa	Direct	4 CFU
02	Ananda bhairava rasa	Direct	5 CFU

Fungal and bacterial count is within permissible limit.

Table No. 10 : Quality control standards for tablets.

Si. No	Test	Results
1	Hardness	10 kg
2	Uniformity of weight	76 mg
3	Friability test	00
4	Disintegration time	17.2 minutes
5	Dissolution rate	≥60 min

c) Experimental study results

Maximal Electroshock Seizure (MES) Method:

Ananda Bhairava Rasa (ABR) exhibited significant anticonvulsant activity in the MES model by reducing tonic flexion (69.29%), tonic extension (80.76%), clonic convulsions (86.36%), and stupor (87.5%) compared to the control group. The effect of ABR was comparable to, and in some parameters superior to, the standard drug, with statistically significant results ($p < 0.05$ to $p < 0.001$). ABR also improved the regaining of fighting reflex, indicating enhanced recovery following seizure episodes.

PTZ-Induced Kindling Model

In the PTZ kindling model, ABR significantly reduced seizure severity across different grades, including Grade 1 (39.85%), Grade 2 (46.38%), Grade 3 (77.78%), Grade 4 (91.53%), and Grade 5 seizures (89.09%) compared to the control group. The maximum protection was observed against severe generalized seizures (Grades 4 and 5). The results were statistically significant ($p < 0.05$ to $p < 0.001$) and comparable to

the standard drug. Overall, ABR demonstrated potent anticonvulsant activity in both MES and PTZ models, supporting its therapeutic potential in Apasmara.

5) DISCUSSION

Ananda Bhairava Rasa (ABR) was prepared as a classical Kharaliya Rasayana by triturating equal proportions of Shuddha Hingula, Shuddha Vatsanabha, Trikatu, Shuddha Tankana and Shuddha Gandhaka with fresh Jambeera Swarasa for 2 Yama (6 hours), producing a homogeneous Kalka and uniform reddish Vatis. Shuddha Hingula was obtained by seven Bhavana with Ardraka Swarasa, resulting in micronization, homogenization and bright-red, smooth consistency. Shuddha Vatsanabha was processed by Dolayantra Swedana in Godugdha, while Tankana underwent Nirjalikarana, resulting in lighter and finer material. Gandhaka Shodhana by Kurmaputa with Godugdha yielded soft, bright-yellow purified Gandhaka, and Churnikarana of Vatsanabha, Tankana and Trikatu improved particle size and



surface area, thereby enhancing the pharmaceutical quality of ABR

Discussion of Pharmaceutical study

The pH of Ananda Bhairava Rasa was 6.7, indicating a nearly neutral formulation, which may favour gastrointestinal tolerance and physicochemical stability during oral administration. The total ash value was 32.5% (N.R. 15–45%), reflecting the substantial inorganic and mineral content of the formulation and suggesting proper incorporation and processing of its mineral ingredients. The acid-insoluble ash value was 18.5%, indicating the presence of acid-resistant inorganic constituents, while the water-soluble ash value was 82.5%, suggesting a considerable proportion of water-soluble inorganic components that may influence the dissolution characteristics of ABR. The loss on drying was 9% (N.R. 5–12%), demonstrating an acceptable moisture level that may contribute to formulation stability and reduced susceptibility to microbial proliferation. Microbial evaluation showed a total fungal count of 4 CFU/mL and total bacterial count of 5 CFU/mL, indicating a low microbial load and satisfactory hygienic quality of the prepared formulation. Overall, the observed physicochemical parameters indicate that ABR possessed acceptable pH, ash characteristics, moisture content and microbial quality, supporting its pharmaceutical standardization and suitability for further therapeutic evaluation.

Discussion of Analytical Parameters

ABR Vati showed an average weight of 76 mg, with variation beyond the prescribed $\pm 7.5\%$ limit, possibly due to manual preparation. The hardness was 10 kg, while friability was 0.00%, indicating good mechanical strength and compactness. The disintegration time was 17.2 minutes and dissolution occurred at ≥ 60 minutes, suggesting satisfactory drug-release characteristics. XRD confirmed distinct crystalline mineral phases, while SEM-EDS demonstrated incorporation and transformation of Hingula within the formulation. Particle-size analysis showed reduction from 1001.5 nm in Shuddha Hingula to 515 nm in ABR, indicating effective trituration. FTIR revealed O–H, C=C, C–H, C–N and C–O functional groups, confirming interactions among organic and inorganic constituents.

Discussion on Experimental Study

The present study was undertaken to evaluate the anticonvulsant activity of Ananda Bhairava Rasa (ABR) using the Supra-maximal Electroshock (MES) and PTZ kindling models. The trial group was compared with normal, positive control, and standard drug-treated groups to assess the protective effect of ABR against experimentally induced convulsions.

Swiss Albino Mice: Swiss Albino mice weighing 20–35 g of either sex were selected because of their established suitability and sensitivity for experimental evaluation of anticonvulsant activity. The animals were divided into eight groups of six animals each, and Diazepam was used as the standard drug owing to its well-established anticonvulsant action through enhancement of GABAergic neurotransmission.

Supra-maximal Electric Shock (MES) Model: The MES model is a reliable experimental method for evaluating drugs effective against generalized tonic-clonic seizures, wherein a supra-maximal electric shock of 150–180 mA for 0.2 seconds produces characteristic tonic hind-limb extension. ABR at a dose of 0.020 mg/kg demonstrated reduction in convulsive manifestations and tonic extension compared with the positive control, suggesting anticonvulsant activity that may be attributed to the synergistic actions of its constituent ingredients.

PTZ Kindling Model: Repeated administration of PTZ at 40 mg/kg on alternate days successfully produced progressive seizure activity, while Diazepam significantly suppressed seizure severity, confirming the validity of the model. ABR demonstrated protective activity by reducing seizure intensity and delaying the progression of convulsions, possibly through modulation of inhibitory neurotransmission and neuroprotective mechanisms.

Comparative Efficacy of MES and PTZ Models: Among the two experimental models, the PTZ kindling model appeared comparatively more significant for demonstrating the anticonvulsant efficacy of ABR, with marked reductions of 91.53% in Grade 4 and 89.09% in Grade 5 seizures. However, the significant protection observed in the MES model also indicates an inhibitory effect on seizure propagation, suggesting that ABR possesses anticonvulsant activity in both models with comparatively superior efficacy in the PTZ kindling model.

Probable Mode of Action

Apasmara in Ayurveda is described as a Maharoga involving both Shareera and Manas, characterized by loss of consciousness, abnormal body movements, and impairment of memory and intellect. It is considered to arise predominantly from Vata-Kapha vitiation along with Rajo-Tamo Manodoshha, resulting in obstruction of Manovaha and Samjnavaha Srotas and disturbance of neurological functions. Ananda Bhairava Rasa (ABR), a Khalveeya Rasayana containing Shuddha Hingula, Shuddha Vatsanabha, Trikatu, Shuddha Tankana and Shuddha Gandhaka processed with Jambheera Swarasa, possesses Deepana, Pachana, Medhya, Balya, Rasayana, Yogavahi and Srotoshodhaka properties, which may collectively contribute to its anticonvulsant effect.

Shuddha Hingula, through its Yogavahi, Rasayana, Medhya and Balya properties, may support neuronal function and help alleviate Srotorodha. Properly processed Shuddha Vatsanabha may influence neuromuscular excitability, while its traditional Ushna, Tikshna, Sukshma and Vyavayi properties facilitate rapid systemic action. Trikatu promotes Deepana-Pachana, reduces Ama and Srotorodha, and may enhance the bioavailability of other ingredients; its phytoconstituents may additionally provide antioxidant and anti-inflammatory effects. Shuddha Tankana facilitates Kapha Vilayana, Srotoshodhana and normalization of Vata movement, whereas Shuddha Gandhaka contributes Rasayana, Balya and antioxidant/neuroprotective actions.

Jambheera Swarasa used for Bhavana may enhance homogeneity, absorption and assimilation of the formulation while facilitating finer particle size and improved pharmaceutical



characteristics. The milk and ghee used during Shodhana may contribute Brimhana, Ojovardhaka, Vata-shamana and Medhya effects and support nourishment of Majja Dhatu. Thus, the combined herbo-mineral action of ABR may reduce Vata-Kapha imbalance, remove Srotorodha, improve metabolism, stabilize neuronal activity, reduce oxidative stress and abnormal electrical discharges, and thereby decrease the frequency and severity of convulsive episodes in Apasmara.

6.CONCLUSION:

Ananda Bhairava Rasa (ABR), a classical Khalviya Rasayana, was successfully prepared using properly purified

ingredients and Jambheera Swarasa as Bhavana media, demonstrating the importance of Shodhana and pharmaceutical processing. The analytical findings revealed characteristic physicochemical and structural properties, including a mean particle size of 515.0 nm and the presence of distinct crystalline and functional groups. Experimental evaluation in Swiss albino mice demonstrated significant anticonvulsant activity of ABR in both MES and PTZ-induced seizure models. Thus, the findings support the promising anticonvulsant potential of Ananda Bhairava Rasa and its therapeutic utility in the management of Apasmara.

Annexure II

XRD Graphs of ABR and Shuddha Hingula

Fig. No. 1
Reports of Physical Analysis

APARANTHI MEDICAL COLLEGE, HOSPITAL, PG RESEARCH CENTRE
ROD - 562 203, Salem, Karnataka
Date: 04/09/2026
(ANUSRI approved) Drug testing laboratory (Lic. No. TL-1010375)

DRUG TESTING LAB

Sample number: 10/01/2026
Ref. No.: 07/02/2026
Submitted by: Dr. Anandh Kumar
Sample name: Ananda Bhairava Rasa
Reference: Compound 10/01/2026

Registration No.: 10/10/2026
Batch No.: 64
Mfg. Date: 04/09/2026

Report Date: 07/09/2026
Sample Qty: 400mg
Date of receipt: 04/09/2026
Particulars: Tablets

TEST REPORT
Name: ABR (see rule 100.01 (c))
(As per Drug and Cosmetic act 1940 and the rules there under)

Sl. No.	Test	Result
A. Appearance		
1	Description	White, Tablet
	Tablet Brand	
	Tablet Impression	
B. Physicochemical study		
2	Appearance	White
3	Color of powder	White
4	pH	7.5
5	Acid value	10.00
6	Acid insoluble part	10.00
7	Organic acid value	10.00
8	Water content	10.00
9	Moisture	10.00
10	Crystallinity	10.00
11	Crystallinity (XRD)	10.00
12	Crystallinity (DSC)	10.00
13	Crystallinity (TGA)	10.00
14	Crystallinity (FTIR)	10.00
15	Crystallinity (NMR)	10.00
16	Crystallinity (Mass)	10.00
17	Crystallinity (XPS)	10.00
18	Crystallinity (EDS)	10.00
19	Crystallinity (SEM)	10.00
20	Crystallinity (TEM)	10.00
21	Crystallinity (AFM)	10.00
22	Crystallinity (SQUID)	10.00
23	Crystallinity (XRD)	10.00
24	Crystallinity (DSC)	10.00
25	Crystallinity (TGA)	10.00
26	Crystallinity (FTIR)	10.00
27	Crystallinity (NMR)	10.00
28	Crystallinity (Mass)	10.00
29	Crystallinity (XPS)	10.00
30	Crystallinity (EDS)	10.00
31	Crystallinity (SEM)	10.00
32	Crystallinity (TEM)	10.00
33	Crystallinity (AFM)	10.00
34	Crystallinity (SQUID)	10.00

(Standard deviation shown as per Indian pharmacopoeia)
(Note: All test results are subject to change)

ANALYST
IN-CHARGE
DRUGS AND COSMETICS

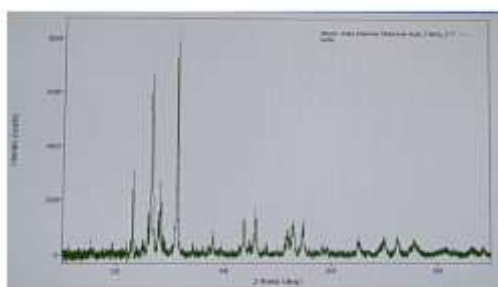


Fig. No. 2 XRD graph of ABR

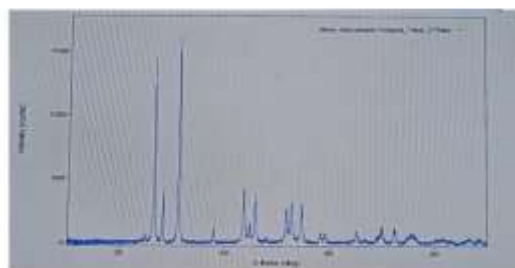


Fig. No. 3 XRD of Shuddha Hingula



Annexure III

FTIR Graphs of ABR and Shuddha Hingula

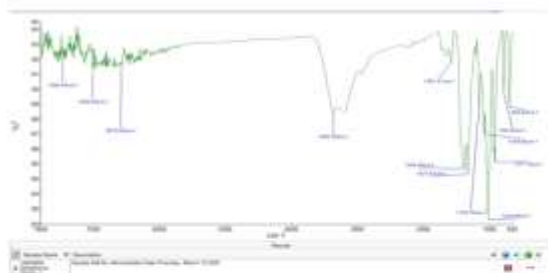


Fig. no. 4 FTIR Graph of ABR



Fig. No. 5 FTIR graph of Shuddha Hingula

Annexure IV

EM-EDS Reports of ABR and Shuddha Hingula

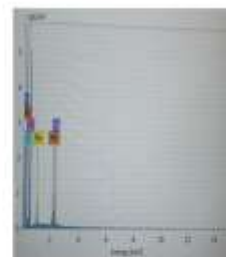
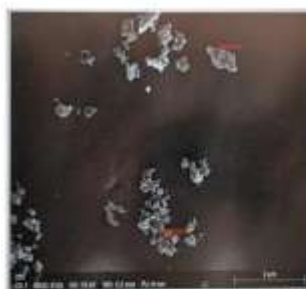


Fig. No. 6 SEM-EDS report of ABR

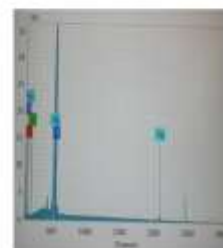


Fig no. 7 SEM - EDS report of Shuddha Hingula

Annexure V

ZETA PLS reports of ABR and Shuddha Hingula



Fig. No.8 ZETA PALS report of ABR



Fig. No.9 ZETA PALS report of Shuddha Hingula

PHARMACEUTICAL STUDY HINGULA SHODANA



Fig. No. 10
Raw Hingula



Fig. No. 11
Ardraka



Fig. No. 12
Ardraka source struma



Fig. No. 13
Hingula bhavara



Fig. No. 14
Hingula after 1st
bhavara



Fig. No. 15
Hingula after 7th
bhavara

VATSANABHA SHODANA



Fig. No. 16
Ashvaththa
Vatshanabha



Fig. No. 17
Gudagaga vatshanabha



Fig. No. 18
Shudhita Vatshanabha
Vatshanabha



Fig. No. 19
Vatsanabha churna



Fig. No. 20
Trikatu churna

TANKANA SHODHANA



Fig. No. 21
Raw Tankana



Fig. No. 22
Tankana bhujana



Fig. No. 23
Shodhita tankana

GANDAKA SHODHANA



Fig. No. 24
Gandhaka Shodhana by karmaputa method



Fig. No. 25
Shodhita Gandhaka



Fig. No. 26
Ingredients of ABR



Fig. No. 27
Jambhera swaras



Fig. No. 28 Adding
Jambhera swaras to
ingredients of ABR



Fig. No. 29
Mixing all ingredients
of ABR



Fig. No. 30
Bhavana of ABR with
Jambhera swaras



Fig. No. 31
Weight of 1 rat



Fig. No. 32
Prepared vatis of ABR

EXPERIMENTAL STUDY

1) Supra maximal electric shock induced seizure



Fig. No. 33
Weighing of mice



Fig. No. 34
Digital
electroconvulsimeter



Fig. No. 35
Subjecting mice to MES

2) Pentylenetetrazole induced seizure method



Fig. No. 40
Weighing of mice



Fig. No. 41
Dosing of ABR



Fig. No. 42
Injecting PTZ



Fig. No. 36
Flexion



Fig. No. 37
Extension



Fig. No. 38
Stupor



Fig. No. 43 Grade 0



Fig. No. 44 Grade 01



Fig. No. 45 Grade 02



Fig. No. 39
Regaining of fighting



Fig. No. 46 Grade 03



Fig. No. 47 Grade 04



Fig. No. 48 Grade 05



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