



REVIEW ARTICLE

CRITICAL APPRAISAL OF DHATTURA (*DATURA METEL* LINN.) IN AYURVEDIC FORMULATIONS

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ABSTRACT:

Pharmaceutical and therapeutic approach towards the treatment of any disease requires the skill of manipulation of resources according to the nature of the sickness. Physicians use several formulations, which may include Herbal, Mineral, or Animal raw materials, to treat ailments. They may also include some poisonous substances which require stringent purification before administration. The consumption of inadequately and improperly purified substances may produce undesired results in the patient. A good number of materials, although poisonous are used as raw materials in Ayurveda medicines because of their therapeutic efficacy. *Dhattura* is one such drug which is an ingredient in many formulations that have multiple therapeutic applications. This work exposes the result of an extensive literature-search that helps not only to find out the various medical formulations of *Dhattura* with indications, but also to estimate the percentage of *Dhattura* in different preparations. From the study it was found that more than **552** formulations contain various parts of *Dhattura* as one of the ingredient. **298** formulations contain *Dhattura* seed as one of the ingredients. In those **174** formulations which are in solid dosage form was taken for the study. No formulations among these contained *Dhattura* in a percentage more than 50%. The permitted dose of *Dhattura bija* is **62.5-125mg** for internal administration. It is pertinent to note that the consumption of *Dhattura* in all the combinations is within its permitted dose for single drug use, while calculating the percentage of *Dhattura* in formulation.

Key words: *Dhattura*, *Datura metel* Linn., Formulations, Dose, Percentage, Efficacy

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INTRODUCTION

The drug has been placed second to the physician in *Chikitsachatushpada*^[1] (four folds of treatment) indicating its importance in treating disease. The art of conversion of undesirable properties of raw materials into desirable properties of medicine lies in the hands of physician. Hence it is an important obligation of any physician to be acquainted with the formulations, dose fixation, mode of action and administration. There are innumerable raw materials used in the preparation of medicines; some of them may be herbal, some mineral, and still some other of animal origin. Among herbal group there are more than 1200 drugs with a good number of sub species used as raw materials. A few of them contain toxic substances also. Although poisonous, they have always been used as raw materials in formulations. Usually, they are used in very small doses after proper *Shodhana*^[2] (purification). This indicates that using poisonous materials in drug formulations is intentional than accidental. It is based on practical knowledge of the ancient scholars that these poisonous drugs are the best and fast acting medicines if they are used properly. *Dhattura* is one such poisonous drug which is an ingredient in many formulations that have multiple therapeutic applications. Ancient scholars of Ayurveda have classified poisonous drugs into two types: *Sthavara* (plant origin)

and *Jangama* (animal origin) *visha*. *Sthavara visha* is again classified into *Visha* (poisons) and *Upavisha*^[3] (secondary poisons). Among *visha* group only *Vatsanabha* (*Aconitum ferox*) is now in use; *Upavisha* group includes *Langali* (*Gloriosa superba* Linn), *Vishamusti* (*Strychnos nux-vomica* Linn), *Karaveera* (*Nerium oleander* Linn), *Jayapala* (*Croton tiglium* Linn), *Dhattura bija* (*Datura metel* Linn.), *Vijaya* (*Cannabis sativa* Linn.), *Gunja* (*Abrus precatorius* Linn.), *Bhallataka* (*Semecarpus anacardium* Linn.f.), *Arka* (*Calotropis gigantea* (Linn.) R. Br.) and *Snuhi ksheera* (*Euphorbia ligularia* Roxb.)^[4].

Dhattura is a well-known and commonly used drug for treating various ailments. Different parts of the *Dhattura* like leaves, seeds, seed oil, flower, and roots are used^[5]. Its seeds are reported to be highly toxic because of presence of high amount of alkaloid, mainly hyosciamine and scopolamine^[6, 7]. This fact is emphasized in authoritative books of Ayurveda by naming the *bija* (seeds) as *vishaadhistana* (site of poison) of *Dhattura*. Hence *shodhana* using various means like *Gomutra* (cow's urine), *Godugdha* (cow's milk) have been prescribed before using it as a safe therapeutic drug^[8]. Studies show that after *shodhana* the hyosciamine content can significantly be reduced (70-90%) and the scopolamine content may be brought down even to zero^[9].

Morphology

Dhattura is an erect, succulent, spreading annual herb or shrub, grows about one meter in height often with divaricate and purplish branches. Its leaves are triangular ovate in outline, and unequal at the base; its flowers are large, solitary, short pedicelled, with purplish outside and white inside. Its fruits are like subglobose capsules covered all over with numerous fleshy prickles irregularly breaking when mature. Its yellowish brown seeds are numerous and smooth. It is seen throughout India as a common weed growing often in waste places and road sides ^[10].

Properties and Uses

The plant is acrid, narcotic, anodyne, antispasmodic, intoxicant and emetic. It is useful as a medicine for asthma, cough, fever, ulcers and skin diseases. The roots are used to treat bites from rabid dogs and are also used to cure insanity. Poultices made out of its leaves are used for ophthalmodynia, otalgia, lumbago, sciatica, neuralgia, mumps and painful swellings. The juice of its leaves is used for epilepsy, cephalalgia, and dandruff. The seeds are useful in treating odontalgia, otalgia, gastropathy and skin diseases. It is also used as a good medicine to treat dandruff and lice ^[10].

Dose

According to reference available in *Bhavaprakasa Bijachurna* (Seed powder) can be used at a dose of ½ to 1 *Ratti* (62.5mg to 125mg) and *Patrachurna* (Leaf Powder) ½ to 1

½ *Ratti* s^[11] (62.5mg to 187.5mg). On contrary, the dose of *bija churna* is ¼ th to ½ *Ratti* (31.25mg to 62.5mg) according to *Rasatarangini* ^[12] where as dose of *Patrachurna* is same as given by *Bhavaprakasa*.

MATERIALS AND METHODS

In order to find out the preparations of *Dhattura* extensive search of literature was carried out; however the search was restricted to the authoritative books of Ayurveda mentioned in Schedule I of Drugs and Cosmetic act 1940. The formulations which contain *Dhattura* seed as one of the ingredients, used for internal administration, either in *Vati* or *Churna* forms with fixed dose, was part of the study; at the same time, formulations repeated in different books with same ingredients, *Churna* and *Avaleha* forms without fixed dose and liquid dosage forms (*Asava*, *Ghrita* and *Taila*) were excluded from the research. The conclusions drawn in this article depend more on *Bharata bhaishajya ratnakar*, *Bhaishajya ratnavali*, *Rasatarangini*, *Rasendra sara sangraha*, *yogaratanakara* and *Rasayogasagara*, *Rasaratnasamucchaya*.

Method of Calculation

The percentage of *Dhattura* = Quantity of *Dhattura* used in formulation / quantity of total solid ingredients (including *Dhattura*) x100. For example in *Sutasekhara rasaprathama* (RYS-vol 2) there are 17 ingredients

(mineral and herbal) of equal proportion out of which *Dhattura bija* is one. The measure of *Bhavana dravya (Bhringaraja rasa)* is not calculated. The percentage of *Dhattura* or quantity of *Dhattura bija* is $1/17 \times 100$ that is 5.88% of total solid ingredients. The size of *Sutasekhara rasa* and the prescribed dose for *Sutasekhara rasa* is one *ratti* (125 mg), hence the quantity of *Dhattura* in single drug dose should be $125 \times 5.88/100 = 7.35$ mg.

Results and Observations

According to the Ayurvedic *Samgraha Granthas* (Different pharmacopoeia), *Dhattura* is used both as internal and as external medicine; it is used in combined formulations

as well as in single drug use. About 552 formulations contain *Dhattura* as an ingredient out of which 454 are used internally, 96 externally, and 2 formulations are both internally and externally used. It is found in various forms such as *Swarasa* (expressed juice), *Kvatha* (decoction), *Churna* (powder), *Taila* (oil), *Ghrita* (ghee), *Avaleha* (confectionaries), *Lepa* (paste), *Rasa* (herbomineral preparations), *Vati* (tablet) and *Varti* (suppositories). 298 compound formulations contain *Dhattura bija* as an ingredient out of which 174 are in solid dosage form (*vati, churna & modaka*) that have fixed dose and are internally administered.

Table 1: Shows the Percentage and Amount of *Dhattura* in each Formulation

Sl.No	Formulations	Rogadhikara (Indications)	Refere nce	Percentage of <i>Dhattura</i> in formulation (%)	Prescribed dose of formulation (mg)	Amount of <i>Dhattura</i> based on dose(mg)
1	<i>Jwaramurai rasa</i>	<i>Jwara</i>	BR	45.71	125	57.13
2	<i>Grahanikapata rasa</i>	<i>Grahani</i>	BBR-2	38.46	250	96.15
3	<i>Pasupato rasa</i>	<i>Ajirna</i>	BBR-3	38.32	125	47.9
4	<i>Agastisutarajo rasa</i>	<i>Grahani</i>	YR	33.33	125	41.66
5	<i>Kaminimadavidhunana rasa</i>	<i>Vajikarana</i>	BR	33.33	125	41.66
6	<i>Dugdhavati –pradhama</i>	<i>Shotha</i>	RYS-1	33.33	125	41.66
7	<i>Mrutyunjaya rasa</i>	<i>Unmada</i>	BR	25.39	125	31.73
8	<i>Jivananandabhram</i>	<i>Jwara</i>	BBR-2	25	125	31.25
9	<i>Unmadagajakesari rasa</i>	<i>Unmada</i>	YR	25	500	125
10	<i>Mahajwarankush rasa</i>	<i>Jwara</i>	RRS	25	250	62.5

11	<i>Jivananandabhram</i>	<i>Jwara</i>	BR	25	125	31.25
12	Kanakasundarivati	Kapharoga	RYS-1	25	125	31.25
13	<i>Sannipatabhairavo rasa-1</i>	<i>Jwara</i>	BBR-5	23.07	125	28.83
14	<i>Sannipatabhairavo rasa</i>	<i>Sannipata</i>	BR	21.42	250	26.77
15	<i>Aanandabhairavigutika</i>	<i>Sannipata</i>	BBR-5	20	125	25
16	<i>Shankhavishodaya rasa</i>	<i>Vishamjwara</i>	RT	20	125	25
17	<i>Pralapantak rasa</i>	<i>Agnimandya</i>	RT	20	125	25
18	<i>Unmadagajankush</i>	<i>Unmada</i>	RT	20	125	25
19	<i>Retorodhinigutika- dwitiya</i>	<i>Vajikarana</i>	RYS-2	20	125	25
20	Jwararyabhram	Jwara	RYS-1	18.18	250	45.45
21	<i>Alpajwarankusa rasa</i>	<i>Jwara</i>	BBR-1	16.66	250	40
22	<i>Jwarakruntano rasa</i>	<i>Jwara</i>	BBR-2	16.66	250	41.65
23	<i>Pramehankush rasa</i>	<i>Prameha</i>	BBR-3	16.66	250	41.65
24	<i>Bruhatkanaksundaro rasa</i>	<i>Pittatisara</i>	RSS	16.66	250	41.65
25	<i>Grahanikapato rasa</i>	<i>Grahani</i>	RSS	16.66	250	41.65
26	<i>Jwararyabhram</i>	<i>Jwara</i>	BR	16.66	125	20.825
27	<i>Kanaksundar rasa(bruhat)</i>	<i>Pittatisara</i>	BR	16.66	250	41.65
28	<i>Sannipatasurya rasa</i>	<i>Jwara</i>	BR	16.66	250	41.65
29	<i>Jatiphaadivati(Grahanik apata rasa)</i>	<i>Grahani</i>	BR	16.66	250	41.65
30	<i>Kalpalatavati</i>	<i>Shotha</i>	BR	16.66	125	20.825
31	<i>Vruhat kanaka sundaroRasa</i>	<i>Atisara</i>	BBR-4	16.6	250	41.5
32	<i>Kanakasundaro rasa-2</i>	<i>Atisara</i>	BBR-5	16.6	250	41.5

33	<i>Vrishyarajavati-pradhama</i>	<i>Vajikarana</i>	RYS-2	14.285	125	17.85
34	<i>Sarvasannipatanasaka rasa</i>	<i>Sannipata</i>	RYS-2	14.285	125	17.85
35	<i>Chakrika rasa</i>	<i>Sannipata</i>	BBR-2	14.28	125	17.85
36	<i>Jwarankusha rasa-8</i>	<i>Jwara</i>	BBR-2	14.28	125	17.85
37	<i>Paradadi vati-1</i>	<i>Grahani</i>	BBR-3	14.28	125	17.85
38	<i>Rasachandrikavati</i>	<i>Shiroroga</i>	BBR-4	14.28	125	17.85
39	<i>Hemasundara rasa-2</i>	<i>Sangrahani</i>	BBR-5	14.28	250	35.7
40	<i>Unmadakuthara rasa</i>	<i>Unmada</i>	BBR-5	14.28	250	35.7
41	<i>Kameshvara rasa-1</i>	<i>Vajikaran</i>	BBR-5	14.28	125	17.85
42	<i>Kanaksundara rasa</i>	<i>Grahani</i>	RRS	14.28	250	35.7
43	<i>Kanaksundaro rasa</i>	<i>Jwara, Atisara</i>	RSS	14.28	125	17.85
44	<i>Kanakprabhavati</i>	<i>Jwaratisara</i>	RSS	14.28	125	17.85
45	<i>Dugdhavati</i>	<i>Sangrahani</i>	BR	14.28	125	17.85
46	<i>Sutikahara rasa-2</i>	<i>Sutikaroga</i>	BR	14.28	250	35.7
47	<i>Chakrika rasa</i>	<i>Sannipatajwara</i>	BR	14.28	125	17.85
48	<i>Ananda Rasa</i>	<i>Atisara</i>	BBR-1	12.5	125	15.625
49	<i>Unmadahara yoga</i>	<i>Unmada</i>	BBR-1	12.5	250	31.25
50	<i>Dugdhavati-3</i>	<i>Shotha</i>	BBR-3	12.5	125	15.625
51	<i>Paradadiyagah</i>	<i>Viryastambhan</i>	BBR-3	12.5	125	15.625
52	<i>Pramadanando rasa-2</i>	<i>Prameha</i>	BBR-3	12.5	125	15.625
53	<i>Bhishabha rasa</i>	<i>Jwara</i>	BBR-3	12.5	125	15.625
54	<i>Ravisundaravati</i>	<i>Ajirna</i>	BBR-4	12.5	125	15.625
55	<i>Sannipatasuryo rasa</i>	<i>Sannipata</i>	BBR-5	12.5	250	31.25
56	<i>Sutikaharo rasa-1</i>	<i>Striroga</i>	BBR-5	12.5	125	15.62

57	<i>Aanandabhairavivatika</i>	<i>Sannipatajwara</i>	RSS	12.5	250	31.25
58	<i>Jatiphaladhavati</i>	<i>Arsha</i>	RSS	12.5	250	31.25
59	<i>Vadavanalorasa</i>	<i>Sannipata</i>	BR	12.5	250	31.25
60	<i>Jwaramatangakesari</i>	<i>Jwara</i>	BR	12.5		23.43
61	<i>Kanaksundar rasa</i>	<i>Jwara</i>	BR	12.5	250	31.25
62	<i>Atisaradalanao rasa-dwitiya</i>	<i>Atisara</i>	RYS-1	12.5	125	15.25
63	<i>Grahanikapata rasa-tritiya</i>	<i>Grahani</i>	RYS-1	12.5	250	31.25
64	<i>Nagendra rasa-pradhama</i>	<i>Vishuchika</i>	RYS-1	12.5	125	15.625
65	<i>Jwaramatangakesari rasa</i>	<i>Jwara</i>	BBR-2	11.11	125	13.88
66	<i>Tarunarka rasa-tritiya</i>	<i>Sarvajwara</i>	RYS-1	11.11	125	13.88
67	<i>Mrutasanjivanivatika</i>	<i>Sannipatajwara</i>	BBR-4	11.1	250	27.75
68	<i>Aanandabhairavivatika</i>	<i>Jwara</i>	BBR-5	11.1	250	27.75
69	<i>Jatiphaladivati</i>	<i>Agnimandya</i>	BR	11.1	375	41.62
70	<i>Yuvatilila rasa</i>	<i>Vajikarana</i>	RYS-2	10.898	750	14.235
71	<i>Jwarabhairava rasa-2</i>	<i>Jwara</i>	BBR-2	10.71	125	13.38
72	<i>Kanaksundara rasa-2</i>	<i>Jwara</i>	BBR-1	10	250	25
73	<i>Jwarantako rasa</i>	<i>Jwara</i>	BBR-2	10	125	12.5
74	<i>Pushpadhanva rasa-2</i>	<i>Vajikaran</i>	BBR-3	10	375	37.5
75	<i>Kalakantako rasa-chaturtha</i>	<i>Pakshaghate</i>	RYS-1	10	125	12.5
76	<i>Grahanisardulavatika</i>	<i>Grahani</i>	RYS-1	10	125	12.5
77	<i>Jwalamukhi rasa</i>	<i>Sula</i>	RYS-1	10	750	75
78	<i>Sindura yoga</i>	<i>Vajikarana</i>	RYS-2	10	125	12.5
79	<i>Bhudaro rasa</i>	<i>Shoola</i>	BBR-3	9.09	750	68.175

80	<i>Jwarariabhram</i>	<i>Jwara</i>	RSS	9.09	250	22.725
81	<i>Damareswarabhram</i>	<i>Hikka , swasa</i>	RYS-1	9.09	125	11.36
82	<i>Sannipatavadavanala rasa</i>	<i>Sannipatajw ara</i>	BBR-5	8.695	250	21.73
83	<i>Jwarari rasa</i>	<i>Vatic jwara</i>	RSS	8.69	125	10.86
84	<i>Unmattabhairava rasa</i>	<i>Kasa</i>	BBR-1	8.33	375	31.2
85	<i>Narayanajwarankush rasa</i>	<i>Jwara</i>	BBR-3	8.33	250	20.825
86	<i>Mahalaksmivilas rasa-1</i>	<i>Kapha</i>	BBR-4	8.33	250	20.825
87	<i>Mahajwarankush rasa</i>	<i>Vishamjwara</i>	YR	8.33	250	20.825
88	<i>Narayanjwarankush rasa</i>	<i>Sannipatajw ara</i>	YR	8.33	375	10.41
89	<i>Athonmatabhairava rasa</i>	<i>Kshayakasa</i>	YR	8.33	125	31.23
90	<i>Viswodipakabhram</i>	<i>Agnimandhy a</i>	RYS-2	8.33	125	10.412
91	<i>Vadavanalo rasa</i>	<i>Sannipatajw ara</i>	RSS	7.84	250	19.6
92	<i>Kalari rasa</i>	<i>Sannipata</i>	BBR-1	7.69	250	19.225
93	<i>Chintamani rasa-2</i>	<i>Jwara</i>	BBR-2	7.69	250	19.225
94	<i>Rasendragutika</i>	<i>Kasa</i>	RC ²⁵	7.69	250	19.225
95	<i>Bruhatrasendragutika</i>	<i>Kasa</i>	BR	7.69	250	19.225
96	<i>Unmattabhairava rasa- dwitiya</i>	<i>Sannipata</i>	RYS-1	7.69	250	19.225
97	<i>Rasaraja rasa-chaturtha</i>	<i>Vrana</i>	RYS-2	7.69	375	27.71
98	<i>Lakshmivilasa rasa- tritiya</i>	<i>Kapharoga</i>	RYS-2	7.69	250	19.225
99	<i>Unmadagajankusa rasa- dwitiya</i>	<i>Unmada</i>	RYS-1	7.14	375	26.775
100	<i>Gulmasulahara rasa-</i>	<i>Gulmasula</i>	RYS-1	7.14	500	35.7

	<i>pradhama</i>					
101	<i>Chintamani rasa-2</i>	<i>Sarvajwara</i>	BR	6.66	250	16.65
102	<i>Chintamani rasa-shodasa</i>	<i>Jwara</i>	RYS-1	6.66	375	24.975
103	<i>Mahakalesvaro rasa</i>	<i>Kasa</i>	BBR-4	6.25	125	7.8
104	<i>Mahalakshmiyalas rasa-2</i>	<i>Shiroroga</i>	BBR-4	6.25	250	15.625
105	<i>Rasendra gutika-3</i>	<i>Rasayan</i>	BBR-4	6.25	125	7.81
106	<i>Tripurantak rasa</i>	<i>Kushtha</i>	RRS	6.25	250	15.625
107	<i>Rasachandrikavati</i>	<i>Shiroroga</i>	RSS	6.25	250	15.625
108	<i>Mahalakshmiyalas rasa</i>	<i>Siroroga</i>	BR	6.25	250	15.625
109	<i>Vidyadhara rasa-tritiya</i>	<i>Rasayana,jwara</i>	RYS-2	6.25	250	15.625
110	<i>Jatiphala rasa</i>	<i>Atisara</i>	BBR-2	5.88	125	7.35
111	<i>Jatiphala rasa</i>	<i>Grahani</i>	RSS	5.88	125	7.35
112	<i>Kalagnibhairavo rasa</i>	<i>Jwara</i>	BR	5.88	250	14.7
113	<i>Mahakaleshvaro rasa</i>	<i>Kasa</i>	BR	5.55	125	6.937
114	<i>Bolabaddarasa-mahan-3</i>	<i>Asrugdhara</i>	RYS-2	5.55	250	13.875
115	<i>Sutasekhara rasa-1</i>	<i>Amlapitta</i>	BBR-5	5.5	250	13.75
116	<i>Sleshmakalanala rasa</i>	<i>Sannipata</i>	BR	5.5	125	6.93
117	<i>Raktasutasekhar rasa</i>	<i>Kapha</i>	BBR-4	5.479	125	6.848
118	<i>Praneshwara rasa-2 (laghu)</i>	<i>Jwara</i>	BBR-3	5.26	250	13.15
119	<i>Mahashleshmakalanal rasa</i>	<i>Sannipatajwara</i>	BBR-4	5.26	250	13.15
120	<i>Shleshmakalanalo rasa-1</i>	<i>Jwara</i>	BBR-4	5.26	125	6.575
121	<i>Karpuradhya rasa</i>	<i>Prameha</i>	BBR-1	5	250	12.5

122	<i>Kalagnibhairavo rasa</i>	<i>Sannipata</i>	BBR-1	5	500	25
123	<i>Lakshamivilaso rasa</i>	<i>Sarvavata vicar</i>	BR	5	250	12.5
124	<i>Lakshmvilas rasa</i>	<i>Jwara</i>	BR	5	250	12.5
125	<i>Grahanikapatarasa-jatiphala rasa</i>	<i>Grahani</i>	RYS-1	5	125	6.25
126	<i>Jwaragajankusa-vatadi</i>	<i>Jwara</i>	RYS-1	5	250	12.5
127	<i>Bhutankusha rasa-1</i>	<i>Kasa</i>	BBR-3	4.76	250	11.9
128	<i>Lohamrutyunjaya rasa</i>	<i>Pliha</i>	BBR-4	4.76	375	17.85
129	<i>Swasakaleshvara rasa</i>	<i>Swasa</i>	BBR-5	4.76	250	11.9
130	<i>Gulmasardulo rasa</i>	<i>Gulma</i>	RYS-1	4.76	375	17.85
131	<i>Balasuryodayo rasa-dwitiya</i>	<i>Sarvaroga</i>	RYS-2	4.65	250	11.625
132	<i>Lakshmi vilas-1</i>	<i>Sannipata</i>	BBR-4	4.545	375	17.04
133	<i>Sannipatamatankusha rasa</i>	<i>Sannipata</i>	BBR-5	4.54	1000	45.4
134	<i>Mahajwarankush-5</i>	<i>Jwara</i>	BBR-4	4.34	125	5.42
135	<i>Karpuradigutika</i>	<i>Prameha</i>	BBR-5	4.34	500	21.7
136	<i>Sannipatavidhvansak</i>	<i>Sannipata</i>	BBR-5	4.16	250	10.4
137	<i>Sannipatagajankusha rasa</i>	<i>Sannipata</i>	RRS	4.16	3000	124.8
138	<i>Sleshmasailendra rasa</i>	<i>Kaphajwara</i>	BR	4	500	20
139	<i>Shleshmashailendara rasa</i>	<i>Jwara</i>	BBR-5, BR	3.846	500	19.23
140	<i>Sleshmashailendro rasa</i>	<i>Sleshmikroga</i>	RSS	3.703	1000	37.03
141	<i>Sanjivanabhram</i>	<i>Jwara</i>	BBR-5	3.57	125	4.68
142	<i>Grahanigajakesari rasa</i>	<i>Grahani</i>	YR	3.57	250	8.925
143	<i>Piyushvalli rasa</i>	<i>Grahani</i>	BBR-3	3.44	250	8.6
144	<i>Mahabhra vati-2</i>	<i>Grahani</i>	BBR-4	3.33	250	8.325
145	<i>Mritasanjivanivati-</i>	<i>Grahanyatisa</i>	RYS-2	3.33	125	4.16

	<i>chaturthi</i>	<i>ra</i>				
146	<i>Grahanigajakesari rasa</i>	<i>Grahani</i>	BBR-2	3.22	250	8.05
147	<i>Meghanatha rasa- chatutha</i>	<i>Prameha</i>	RYS-2	3.22	375	12.09
148	<i>Jatiptryadivati</i>	<i>Vajikarana</i>	RYS-2	3.22	500	16.1
149	<i>Vinodavidyadhara rasa- 1</i>	<i>Jwara</i>	BBR-4	3.125	375	11.718
150	<i>Vidhyadhara rasa</i>	<i>Jwara</i>	BR	3.125	250	7.81
151	<i>Vadavanalavati- pradhama</i>	<i>agnimandhya</i>	RYS-2	3.125	375	11.718
152	<i>Vidhyadhara rasa</i>	<i>Jwara</i>	BR	2.94	250	7.35
153	<i>Sannipatabhairavo rasa-3</i>	<i>Jwara</i>	BBR-5	2.857	125	3.57
154	<i>Mahamrutyunjayaloha m</i>	<i>Pliha</i>	BR	2.85	1000	28.5
155	<i>Bhaktottarachurnam</i>	<i>Antrandavid di</i>	RYS-2	2.85	750	21.375
156	<i>Nagarjunavati- pradhama</i>	<i>Urustambha</i>	RYS-1	2.77	250	6.925
157	<i>Sarvarogyavati</i>	<i>Grahani</i>	RYS-2	2.564	250	6.41
158	<i>Chintamani rasa- trayovimsa</i>	<i>Vajikarana</i>	RYS-1	2.5	375	9.375
159	<i>Kameswaramodaka</i>	<i>Vajikarana</i>	RYS-2	2.5	1200	30
160	<i>Madanamodaka – pradhama</i>	<i>Vajikarana</i>	RYS-2	2.31	3000	69.3
161	<i>Kameshvara rasa-2</i>	<i>Vajikaran</i>	BBR-5	2.27	1000	22.7
162	<i>Kshudhavativati- pradhama</i>	<i>Amlapitta</i>	RYS-2	2.22	250	5.55
163	<i>Pashupato rasa</i>	<i>Ajrna</i>	RSS	2.12	125	2.65
164	<i>Kaleshvaro rasa</i>	<i>Swasa</i>	BBR-1	1.96	250	4.225

165	<i>Talakeshvara rasa-9</i>	<i>Kushtha</i>	BBR-2	1.96	375	7.35
166	<i>Kameshvarachurnam</i>	<i>Stambhan</i>	BBR-5	1.8	1000	18
167	<i>Bhangadigutika</i>	<i>Vajikarana</i>	RYS-2	1.8	3000	54
168	<i>Gokshurapaka</i>	<i>Prameha</i>	BBR-2	1.12	3000	33.6
169	<i>Vangeshvaraadivati</i>	<i>Prameha</i>	BBR-4	0.909	3000	27.27
170	<i>Vishvesvaro rasa-1</i>	<i>Vatarakta</i>	BBR-4	0.909	250	2.27
171	<i>Mofarava</i>	<i>Vajikaran</i>	BR	0.602	6000	36.12
172	<i>Sarvamayelakshmivilas rasa</i>	<i>Sarvaroga</i>	RSS	0.49	125	0.6125
173	<i>Plihasardula rasa</i>	<i>Pliha</i>	RYS-2	4.34	250	10.85
174	<i>Sarvaroga rasa</i>	<i>Sarvaroga</i>	RRS	0.91	250	1.99

(**BR**-Bhaishajya ratnavali^[13]; **BBR-1 to 5**-Bharata bhaishajya Ratnakar Volume-1 to 5^[14]; **RSS**- Rasendra sara Sangraha^[15]; **RRS**- Rasaratna Samucchaya^[16]; **RYS-1 to 2** -Rasayogasagara volume-1to 2^[17]; **YR**-Yogaratnakara^[18]; **RT**- Rasatarangini^[19]; **RC**- Rasendra Chintamani^[20]).

Ratio of Dhattura in Formulations: Among the above said 174 formulations, none of them contains more than 50% of Dhattura. Its ratio varies largely from 10 to 50 percent. The details are given below:

40-50%: 1 formulation

30-40%: 5 formulations

20-30%: 8 formulations

10-20%: 58 formulations

Below 10%: 102 formulations

As a single drug *Dhattura* is prescribed for *Unmada* (insanity), *Indralupta* (alopecia), *Slipada* (elephantiasis), *Alarkavisha* (rabbits), *Sotha* (swelling), *Vrana* (ulcers), *Vataroga* (arthritis), and *Visha* (poison). In combination it is prescribed not only for all types of *Jwara* (fever) especially *Sannipataja* and

Vishmajwara, *Unmada*, *Atisara* (diarrhea), *Tivrajvara*, *Arsas* (haemorrhoids), *swasa* (asthma), *kasa* (cough), *Vatavyadhi*, but also for 20 types of *Kapharoga*, *Gulma*, *Udara* (ascitis) and *Amavata* (Rheumatoid arthritis)^[19].

DISCUSSION

Dhattura is one of the potent poisonous drugs. In spite of being toxic a proper processing can convert it into a suitable dosage form for cure of many diseases. So in the present study an attempt was made to collect information about various formulations that can be prepared by using *Dhattura* in combination with other materials. 552 formulations of *Dhattura* have been listed out, among which 174 formulations are exclusively prepared

using *Dhatturabija*. More emphasis was given to these 174 formulations owing to the *vishadhishtana* property of *Dhatturabija*. Many of these formulations are useful in *kaphavata* predominant diseases of respiratory, alimentary, and psychosomatic diseases.

Regarding the dose of *Dhatturabija churna* scholarly opinions vary considerably. According to *Bhavaprakasa* it is $\frac{1}{2}$ -1 *ratti* (62.5mg-125mg), but according to the latest book, *Rasatarangini*, the dose is $\frac{1}{4}$ th - $\frac{1}{2}$ *ratti* (31.25mg-62.5mg). It seems that in an earlier period people were stronger and thus they could tolerate high dose of medicine; by contrast, in later periods strength of people decreased and are therefore unable to consume high dose. Hence the books of modern period prescribe a reduced or limited dose.

It can be concluded that after proper purifications the poisonous *Dhattura* can beneficially be used as an effective medicine. However, all of the above said 174 formulations that are exclusively prepared using *Dhattura bija* contained only less than 50 percent of *Dhattura*. In fact only one formulation uses 40 to 50 percent of it; five formulations had 30 to 40 percent; eight formulations had 20 to 30 percent; fifty eight formulations had 10 to 20 percent; and one

hundred and two formulations contained less than 10 percent.

Remarkably, according to *Bhavaprakasa* in all the formulations the percentage of consumption of *Dhatturabija* is done in permissible limit. According to *Rasatarangini*, among the six formulations which use more than 30 percent of *Dhattura*, only one exceeds the permissible limit in *Dhattura* conception (*Grahanikapata rasa*- 96.15mg). Among eight formulations which have the percentage of *Dhattura* between 20-30 percent, *Unmadagajakesari rasa* is the only one that breaks the permissible boundary limit (125mg); in four other remaining formulations although the percentage of *Dhattura* is less than 10 percent, because of the high dose of administration, one consumes more amount of *Dhatturabija* in a single dose administration (*Sannipatagajamkusa rasa* -124.8mg, *Jwalamukhi rasa*- 75mg, *Madanamodakapradhama*- 69.3mg, *Bhudhara rasa*- 68.15mg). But if one follows the direction of *Bhavaprakasha* they all correspond to the prescribed dose. *Rasa dravya* and *Dhattura* prescribed in all these formulations are used after proper purification process. Even though the dose of *Dhattura bija churna* in these formulations is higher than the permitted measure, other ingredients in those combinations will solve the matter. These prescriptions give us a glimpse on the

knowledge and insight of the scholars on poisonous drugs.

CONCLUSION

Five hundred and fifty two formulations have been listed out here as part of literary review. Among them 174 solid dosage formulations contain *Dhattura bija* (*Datura metel* Linn.) as one of the ingredients. If calculates the ratio of *Dhattura bija* in them and then compare it with its dose of administration, can understand that all the formulations are in safe zone. Hence it may reasonably be concluded that formulations that contain poisonous drugs can be used safely and effectively if they are properly purified.

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