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PHARMACEUTICAL STANDARDIZATION OF *VASA AVALEHA* AND *VASA GHANAVATI*

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Abstract: *Bhaishajya kalpana may be considered as upkalpana of kashaya kalpana or ayurvedic pharmaceutics. Bhaishajya kalpana is back bone of ayurveda. It is the science, which convert the raw drugs into effective dosage form, as per need of drugs administration. The modifactory procedures which enhance the drug action increase half life of drug, improve potentiality, fulfill patient complaints called as sanskara. Vasa ghanvati and Vasa avaleha was prepared with the classical reference from Bhaishajya Ratnavali (14/37) with slight modification while selecting the sweetening substances. The details of various practical were the commented and calibrated in the form of temperature, duration and yield in the last calculate cost of final product. Also physico-chemical analysis of sample (formula) was done. This includes P^H, Total solid content, methanol soluble extractive, water soluble extractive, sugar soluble extractive, sugar contain, total alkaloid, TLC or HPTLC, Hardness.*

Safety, efficacy of this formulation, Vasa Avaleha and Vasa Ghanavati was carried out with the help of clinical trials. The clinical trials carried out by two formulations to the randomized divided patient in two groups for twenty eight days. Total thirty (30) patients will be enrolled, fifteen (15) patients in each group. The patients were selected to full fill the inclusion and exclusion criteria.

Keyword: *Avaleha, Ghana, Shwasa roga*

Introduction: *Bhaishajya kalpana* may be considered as *upkalpana* of *kashaya kalpana* or *ayurvedic* pharmaceutics. *Bhaishajya kalpana* is back bone of *ayurveda*. It is the science, which convert the raw drugs into effective dosage form, as per need of drugs administration. The modifactory procedures which enhance the drug action increase half life of drug, improve potentiality, fulfill patient complaints called as *sanskara. Vasa ghanvati* and *Vasa avaleha* were prepared with the classical reference from *Bhaishajya Ratnavali*[1] (14/37) with slight modification while selecting the sweetening substances. The details of various practical were the commented and calibrated in the form of temperature, duration and yield in the last calculate cost of final product. Also physico-chemical analysis of sample (formula) was done. This includes P^H, Total solid content, methanol soluble extractive, water soluble extractive, sugar soluble extractive, sugar contain, total alkaloid, TLC or HPTLC, Hardness..

Aims & Objective

1. To develop Standard manufacturing process of *Vasa Ghanavati & Vasa avaleha*
2. To compare clinical efficacy of *Vasa Ghanavati* and *Vasa avaleha* in the management of *Tamaka shawasa* (Bronchial Asthma)

Plan of Study

Pharmacognostical Study

Table-1: Showing the pharmacognostical parameter of Vasa patra and Pippli churna

Microscopical Characterization	***Vasa*** [2]	***Pipali*** [3]
Color	Green	Dark Green
Odour	Bitter	Spicy
Taste	Characteristic	Characteristic

Nature of the Powder	-	Coarse
Microscopic Characters identified	-Multicelluar Trichome -Simple Trichome -Glandular Trichome -Anomocytic Stomata - Prismatic crystal -Lignified Pitted Vessels	-Mesocarp cell -Stone cells , Stone cell with wide lumen -Simple fiber -Simple starch grain -Iodine stained starch grain

Materials & Methods

Raw drugs of *Vasa Ghanavati* and *Vasa Avaleha* were identified & authentified by the drug selection committee of the Sundar Ayurveda teaching pharmacy, Nadiad.

A. ***Vasa Avaleha:*** *Vasa swarasa* was extracted from freshly collected *vasa* leaves -taken into *avalehya patra*- sugar candy added - heated over *mandagni*, reaches proper *paka* state -*pippali churna & Cow ghrita* were added. Mixed well, *avaleya patra* taken out from the fire & *avaleha* becomes in to cold state , *madhu* was mixed. This recipe called *vasa avaleha*. Preserved in clean, air tight wide mouthed glass or plastic containers.

B. Vasa Ghanavati: *Vasa swarasa* was extracted from freshly collected *vasa patra* with method of mechanically use of mixter. 1st of all crushing *vasa patra* and put it on mixter bowl with adding 50 ml of water, after 2min again adding ml water. Squeezing the *vasa swarasa*. Again *vasa patra* add in mixter bowl, then add *vasa swarasa* and mixing well. Finally squeezing *vasa swarasa* and keep it in steel vessel. After that take a *vasa swarasa* and heat in steel vessel by gas, temperature recorded in every stage. 1st green patches and light brown liquid layer become then dark brown liduid. Finally it was converted in to a *Ghana*. *Pippli churna* added in *Ghana*, then mixing well (colour was light green). In this material finally added binding agent an amount of 10%, mixed well. By adding slight *vasa swarasa* for making granules, mixed well. Product of granules dried in a sun light in steel vessel. Finally this dried granules convert in to tablet with help of tablet rotary compression machine at sundar ayurved teaching pharmacy.

Pharmaceutical Study

Table-2: Showing the pharmaceutical process of *Vasa avaleha* and *Vasa ghanavati*

Parameter	*VASA AVALEHA*[4]	*VASA GHANAVATI* [5]
Ingredients	*Vasa patra swaras*- 8 part *Powdered sita* - 4 part *Pippali churna*- 1 part *Cow ghrita*-1 part *Madhu*- 4 part (B.R.14/37-39)	*Vasa patra swaras*- 8 part *Pippali churna*- 1 part Binding agent- 10 % (Acacia gum) (Sh.Sham.Madhy. Khand 8/1)

Table-3: Showing the three batches of *Vasa Avaleha*

S.N.	Name of Ingredient	Pilot Batch	Batch 1	Batch 2	Batch 3
1	*Vasa patra swaras*	1 lit.	4 Lit.	4 Lit.	4 Lit.
2	*Powdered sita*	500 gm	2 kg	2 kg	2 kg
3	Pippali churna	125 gm	500 gm	500 gm	500 gm
4	Cow ghrita	125 ml	500 ml	500 gm	500 gm
5	*Madhu*	500 ml	2 Lit.	2 Lit.	2 Lit.
	YIELD	1.311 kg	5.548 KG	5.507 KG	5.450KG

Table-4: Showing the three batches of *Vasa Ghanavati*

S. N.	Ingredient	Pilot Batch	Batch 1	Batch 2	Batch 3
1	*Vasa patra swaras*	320 ml	2 Lit.	2 Lit.	2 Lit.
2	*Pippali churna*	40 gm	250gm	250gm	250 gm
3	Binding agent (10 %) Acacia gum	7.2 gm	45 gm	45 gm	45 gm
	YIELD	70 gm	470gm	480 gm	475 gm

Analytical Study

Analysis of *Vasa Avaleha & Vasa Ghanavati*

Table-5: Showing the Organoleptic parameters of *Vasa Ghanavati & Vasa Avaleha*

S. N	Parameter	*Vasa Ghanavati*			*Vasa Avaleha*		
		Batch 1	**Batch 2**	**Batch 3**	**Batch 1**	**Batch 2**	**Batch 3**
1	Colour	Dark Green	Dark Green	Dark Green	Brownish Black	Brownish Black	Brownish Black
2	Order	Characteristic	Characteristic	Characteristic	Characteristic	Characteristic	Characteristic
3	Taste	*Katu Madhura*	*Katu Madhura*	*Katu Madhura*	*Katu Madhura*	*Katu Madhura*	*Katu Madhura*

Table-6: Showing the Physico - Chemical parameters of *Vasa Ghanavati & Vasa Avaleha*

S.N.	Parameter	*Vasa Ghanavati*		
		Batch 1	**Batch 2**	**Batch 3**
1	Size	Diameter :8.03mm Thickness:4.05mm	Diameter :8.00mm Thickness:4.00mm	Diameter :8.04mm Thickness:4.04mm

2	P^H (10% aqueous solution)[6]	6.5%v/w	6.4%v/w	6.5%v/w
3	Ash Value % w/w[7]	13.5 % w/w	13.1 w/w	13.4 w/w
4	Acid-insoluble Ash value % w/w[8]	3 % w/w	2.9 % w/w	3 % w/w
5	Alcohol soluble extractive value % v/w[9]	16.8 % v/w	16.8 % v/w	16.8 % v/w
6	Water soluble extractive value % v/w[10]	72 % v/w	71 % v/w	70 % v/w
7	Loss on Drying %[11]	1 %	0.9 %	1 %
8	Consistency	Solid	Solid	Solid
9	Friability	0.6 %	0.5 %	0.5 %
10	Disintegration Time	37 min	37 min	35 min

Table-7: Showing the Heavy Metal Analysis[12] of *VASA GHANAVATI*

S. N.	Parameters	Permissible limit	Result	Test Method Reference
1	Lead (Pb)	10 ppm	ND	IP, Vol.-I (2010) Pg. 109
2	Cadmium (Cd)	0.3 ppm	ND	
3	Arsenic (As)	3 ppm	0.316 ppm	
4	Mercury (Hg)	1 ppm	0.048 ppm	

Table- 8: Showing the Microbial Limit Test[13] of *VASA GHANAVATI*

S. No.	Parameters	Permissible limit	Result	Test Method Reference
1	Total microbial plate count	NMT 10^5 cfu / g	1471cfu / g	IP, Vol.-I (2010) Pg. 677
2	Total yeast & mould	NMT 10^3 cfu / g	769 cfu / g	
3	Staphylococcus aureus	Absent	Absent	
4	Escherichia coli	Absent	Absent	
5	Salmonella Spp.	Absent	Absent	
6	Pseudomonas aeruginosa	Absent	Absent	

Table-9: Showing the Physico - Chemical parameters of *Vasa Avaleha*

S.N.	Parameter	*Vasa Avaleha*		
		Batch 1	**Batch 2**	**Batch 3**
1	Size	-	-	-
2	P^H (10% aqueous solution)	6.28%v/w	6.30%v/w	6.30%v/w
3	Ash Value % w/w	1.5 % w/w	1.5 w/w	1.4 w/w
4	Acid-insoluble Ash value % w/w	0 % w/w	0 % w/w	0 % w/w
5	Alcohol soluble extractive value % v/w	55.2 % v/w	55.3 % v/w	55.2 % v/w
6	Water soluble extractive value % v/w	67.2 % v/w	67.1 % v/w	67.3 % v/w
7	Loss on Drying %	10 %	9 %	9 %
8	Consistency	Semi Solid	Semi Solid	Semi Solid
9	Friability	-	-	-
10	Disintegration Time	-	-	-
11	Sugar Content total[14]	65.41 % w/w	65.00 % w/w	66.41 % w/w
12	Reducing	30.45 % w/w	30.00 % w/w	31.45 % w/w
13	Non-reducing	34.96 % w/w	35.00 % w/w	34.96 % w/w

Table-10: Showing the Heavy Metal Analysis of *VASA AVALEHA*

S. N.	Parameters	Permissible limit	Result	Test Method Reference
1	Lead (Pb)	10 ppm	ND	IP, Vol.-I (2010) Pg. 109
2	Cadmium (Cd)	0.3 ppm	ND	
3	Arsenic (As)	3 ppm	ND	
4	Mercury (Hg)	1 ppm	0.070 ppm	

Table-11: Showing the Microbial Limit Test of *VASA AVALEHA*

S. N.	Parameters	Permissible limit	Result	Test Method Reference
1	Total microbial plate count	NMT 10^5 cfu / g	1017cfu / g	IP, Vol.-I (2010) Pg. 677
2	Total yeast & mould	NMT 10^3 cfu / g	Absent	
3	Staphylococcus aureus	Absent	Absent	
4	Escherichia coli	Absent	Absent	
5	Salmonella Spp.	Absent	Absent	
6	Pseudomonas aeruginosa	Absent	Absent	

Table no. 12 Showing the Phyto - Chemical parameters [15] of *Vasa Ghanavati & Vasa Avaleha*

S.N.	Parameters	*Vasa Ghanavati*			*Vasa Avaleha*		
		Batch 1	**Batch 2**	**Batch 3**	**Batch 1**	**Batch 2**	**Batch 3**
1	Glycoside	Present	Present	Present	Present	Present	Present
2	Amino acid	Absent	Absent	Absent	Absent	Absent	Absent
3	Protein	Absent	Absent	Absent	Absent	Absent	Absent
4	Carbohydrate	Present	Present	Present	Present	Present	Present
5	Flavanoid	Absent	Absent	Absent	Absent	Absent	Absent
6	Tannin	Present	Present	Present	Absent	Absent	Absent

7	Steroid	Present	Present	Present	Absent	Absent	Absent
8	Saponin	Present	Present	Present	Absent	Absent	Absent
9	Alkaloid	Present	Present	Present	Present	Present	Present

Discussion

In *Bhaishjya kalpana* concluded primary and secondary *kalpana*. In secondary *kalpana*, *Avaleha kalpana* and *Ghana kalpana* is a very potent and widely use in therapy. In preparation of *Vasa Avaleha* and *Vasa ghanavati* in relation to safety and efficacy all the classical parameter as well as modern parameter are adapted. The classical parameter verified on the bases of analytical profile. The three batches are standardized of both compound, there is *Vasa avaleha* and *Vasa ghanavati* on classical bases. Analytical profile of *Vasa avaleha* and *Vasa ghanavati* also detected on the bases organolaptic, physico chemical, heavy metal analysis, microbial limit test of both sample. The finding of above profile saws the on parameter of API no hazards are seen.

Conclusion: *Vasa avaleha* & *Vasa ghanavati* are pharmaceutically standardized on the bases of physico chemical parameter as well as modern parameter. The scientific evaluation of analytical as well as physico parameter of three bathes saws the value of reading within limit according to API. Heavy metal analysis and microbial limit test of both sample saws the potent efficacy of compound in relation to clinical evaluation.

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