IAMJ

Review Article *International Ayurvedic Medical Journal* *ISSN:2320 5091*

STUDY ON *KUDAVA* AND *PRASTA MANA* IN WEIGHT AND VOLUME W.S.R TO *BALA TAILA*

Seema M. B.[1] Hirehal Pampanna Gouda[2]

[1]Dept. of Rasashashtra and Bhisajya kalpana, [2]Dept. of Samhita,

SDM College of Ayurveda, Udupi, Karnataka, India

ABSTRACT

Ever since human become civilized he started giving due regard to measure his surroundings, be it a barter system or a highly evolved economic activity. The measurement has become the base for foundation of all science. In *Ayurveda* such a study concerning the dose and administration of drugs are dealt in *Rasa Shastra* and *Bhaishajya Kalpana*. The measurement standard in practice during ancient period is different from the present era. To standardize these different systems of measurements found in *Ayurveda*, the Pharmacopoeia Committee of Central Government with Indian standard institution has given certain weight wise measurements for all measurements found in *Samhita*. But practically, many problems are faced during the pharmaceutical preparation. In this paper an attempt is made to understand what *Kudava Mana* in terms of volume wise measurement. In fact Indian Pharmacopoeia Committee of Central Government has claimed *Kudava Mana* is as the weight wise measurement.

Keywords: *Kudava Mana*, *Bala taila*, Indian Pharmacopoeia Committee of Central Govt.

INTRODUCTION

The knowledge about weight and measurement place a pivotal role for any scientific study. In *Ayurveda* such a study concerning the dose and administration of drugs are dealt under the specialization called *Rasa Shastra* and *Bhaishajya Kalpana*. Distinctly the system of measurement that was followed in India revolves around *Magadha* (500 to 321 BC) and *Kalinga* (261 BC) period, hence known as *Magadha Mana* and *Kalinga Mana* respectively. *Ayurveda* has also followed this *Mana*, hence it is needless to say that the pharmaceutical science of *Ayurveda* has widely adopted both the *Mana* for all practical purposes.

One can trace the history of *Mana* starting from *Veda*. In *Arthashatra*, the specification of the materials to be used to prepare the instruments was clearly mentioned as- "when the substance comes in contact with the measuring material, it should neither increase nor decrease by weight or volume with any hot or cold thing. The measuring material should be prepared out of the available stone from *Magadha* and *Mekala* (*Narmada* River)"[1]The detail explanation about *Mana paribasha* is seen in all the *samhitas*. *Mana* starts from the smallest particle as *Trsarenu*. It is also instructing to find typical names of fruits to denote *Mana* of particular substance such as *Bilva Phala*, *Bibitaki* etc in many contexts of *Samhitas*. It is in *Amarakosha Mana* was

classified as *Poutava*, *Druvaya* and *Payya Mana*, indicating the weight, volume and length wise measurement respectively. Commentator of *Amarakosha Hemachandra* stated that, *Tuladhi* are *Poutava Mana*, *Kudavadi* are *Druvaya Mana* and *Hastadhi* are *Payya Mana*, indicating *Druvaya Mana* will start from *Kudava*[2]. *Kudava Mana* is not only used to measure liquids, but also used for measuring solids[3].

We do have references where in *Kudava Patra* (vessel) should have four *angula* pra*mana visteerna*[4] (7.8cms in height, breadth and diameter, where 1 *angula* is standardized into 1.95 cm). As per *AmaraKosha Kudava* word refers to "a small pot".[5]

All the above references indicates that *Kudava Mana* refers to the volume of a substance and not indicative of weight. Four times of *Kudava* is one *prasta* and *prasta* is always being measured for liquid in terms of volume.

The Pharmacopoeia Committee of Central Government with Indian standard Institution approved *Kudava* as 192g and *prasta* as 768g. Practically speaking in many of the preparations like *Kshara*, *ksheera bala Taila* etc the drugs like *bala*, *guduchi* etc are light in weight, where weight of the drug is too less when compare to its volume and there will be a marked difference in its preparation as well as in end product.

In the present study *bala taila* preparation is taken with reference to *Charaka Samhita*.[6] All the ingredients of *bala taila* were taken both in volume wise according to *Sharangdhara* and weight wise measurement according to Pharmacopoeia Committee of Central Government. A *Kudava patra* when prepared according to the specification of *Sharngadhara* holds 290ml of water.

State of the drug	Form of the drug	Quantity in weight.
Fresh *bala moola*	Crushed	50 g
Dry *bala moola*	*Yava kuta churna*- sieve no:22	35 g
Water		232 g
Tila taila		261 g
Ksheera		319 g

1 *Kudava* according to Indian Pharmacopoeia Committee refers to192 g

State of the drug	Form of the drug	Quantity in volume
Fresh *bala moola*	Crushed	63.6 ml
Dry *bala moola*	*Yava kuta churna*(sieve no:22)	1590.8 ml
Water		240 ml
Tila taila		213 ml
Ksheera		172 Ml

In the preparation of *Bala moola kwatha*, if 192 g of dry *bala moola* is taken, its volume measurement in *Kudava patra* will be 5.49 *Kudava*. Also the quantity of water added became less when compared to the quantity of the drug. Another source of information

refers to the need of fresh form of *Bala moola* in any form of preparation.[7] In the present study four samples of *Bala moola* were taken in fresh and dry forms in weight wise and volume wise.

MATERIALS & METHODS

Preparation of *Bala taila*

Vessel – copper

Capacity of the vessel- 30 Ltrs (*kwatha kalpana*) and -17 Ltrs (*sneha kalpana*).

Agni- Mandagni is maintained.

Procedure is done as per *Sharangdhara:* *Taila Taila* is heated till *phenashanti* and allowed to stand for cooling. *Kwatha* is prepared by drug, water in 1:4 and was reduced to 1/4th ; 1 (Drug) : 4 (water) —1/4th (*kwatita drava*)[8] *Kwatha choorna* passed to mesh size 22. For fresh form of drug small pieces were made with the size of ½ inch and crushed in *kalva yantra*. *Sneha kalpana* is prepared in the ratio of 1/6th (Kalka) : 1 (Sneha) : 4 (Dravadravya)[9] (where *kwatha* and *ksheera* is taken in the ratio of 3:1). [10] Normally *kalka*, *Sneha* and *drava dravya* are taken in the ratio of 1/4th:1:4 respectively in *Sneha kalpana*. However, *kalka pramana* is 1/6th quantity of *Sneha* in this preparation and 4 times of *Dravadravya* is mentioned. All are taken together and kept on *mandagni. Sneha* is filtered after *Sneha siddhi lakshana*.

1. KBT: Fresh drug with volume wise measurement

Preparation of *kwatha*

12 *Kudava* of *dravya* + 12 *prasta* of water - reduced to 3 *prasta*.

Prepartion of *kshreera bala Taila*

Quantity of *kalka*- 1/6th of *Sneha*- 193ml

Quantity of *Sneha*- 1 *prasta* (1160 ml)

Quantity of *dravadravya*- 3 *prasta* of *kwatha* and 1 *prasta* of *ksheera*

Quantity of end product = 1150 ml.

2. KBT: Fresh drug with weight wise measurement

Preparation of *kwatha*

2304 g Drug: water (9216 g i.e 11520 ml) ------ 3 *prasta* (2304 g i.e.2880 ml)

Prepartion of *kshreera bala Taila*

Quantity of *kalka*-1/6th of *Sneha*- 128 g

Quantity of *Sneha* -768 g (853 ml)

Quantity of *dravadravya*- 3 *prasta*- 2304 g = 2880 ml of *kwatha* and 1 *prasta* -768 g = 698 ml of *ksheera*

Quantity of end product = 600 g (666 ml)

3. KBT: Dry drug with volume wise measurement

Preparation of *kwatha*

12 *Kudava* of *dravya* + 12 *prasta* of water- reduced to 3 *prasta*.

Prepartion of *kshreera bala Taila*

Quantity of *kalka* - 1/6th of *Sneha*- 193ml

Quantity of *Sneha* - 1 *prasta* (1160 ml)

Quantity of *dravadravya* - 3 *prasta* of *kwatha* and 1 *prasta* of *ksheera*

Quantityof end product= 1020ml

4. KBT: Dry drug with weight wise measurement

Preparation of *kwatha*

2304 g Drug: water (9216 g i.e 11520 ml) ------ 3 *prasta* (2304 g i.e.2880 ml)

Prepartion of *kshreera bala Taila*

Quantity of *kalka*- 1/6th of *Sneha*- 128 g

Quantity of *Sneha*- 768 g(853 ml)

Quantity of *dravadravya*- 3 *prasta*- 2304 g= 2880 ml of *kwatha* and 1 *prasta* -768 g= 698 ml of *ksheera*

End product quantity= 650 g (722 ml)

Table showing the percentage of loss in K.B.T.in different samples

Sl. No	Form of the drug	Volume/weight of the dravya	Quantity of each ingredients	Quantity obtained	Loss	% of loss
1.	Fresh	Volume	*Taila* =1160ml *Ksheera*=1160ml *Kwatha*=3480ml *Kalka* = 193ml	1150 ml	10 ml	0.86
2.	Wet	Weight	*Taila* =768g (853 ml) *Ksheera*=768g *Kwatha*=2304g *Kalka* = 128 g	6oog (666ml)	187ml	21.92
3.	Dry	Volume	*Taila* = 1160 ml *Ksheera*=1160ml *Kwatha* =3480 ml *Kalka* = 193 ml	1020ml	140 ml	13.72
4.	Dry	Weight	*Taila* =768g (853 ml) *Ksheera*=768g *Kwatha*=2304g *Kalka* = 128g	650g (722ml)	131ml	15.35

DISCUSSION

Mana paribhasha is a basic thing to be known by every physician. *Mana* is always essential starting form selection of the drug to the administration of the medicine. In olden days physician himself used to prepare the medicine in small quantity for his patient. The measurement mentioned in *Samhita* was not clearly understandable. i.e. volume wise or weight wise. But in *Amarakosha*, *Mana* is classified as *Poutava*, *druvaya* and *payya Mana*, indicating weight, volume and length measurement respectively. *Hemachandra*, the Commentator of *Amara kosha* states that, *Kudava* onwards volume measurement, Tula etc are to be considered as the measure of weight and *payya Mana* as the measurement of length. Here the *Kudava Mana* is used for both solid and also for liquid measurement. The size and the material to be used to prepare *Kudava patra* is clearly mentioned in *Sharangadhara Samhita*. To standardize these measurements the Pharmacopoeia Committee of Central Government with Indian standard Institution has given certain weight wise measurements for all measurements which they have mentioned in *Samhita*. Weight as a unit during measuring, might lead to pharmaceutical fault, for instance, quantity of water added is inadequate to abundant raw material during decoction preparation. In this study both fresh and dry form of drug was taken in volume and weight wise measurement. During the pharmaceutical preparation of *Kwatha* following observations were seen.

Table showing the difference in quantity of drug with water

Sl no	Form of the drug	Media of measurement	Weight of the drug	Quantity of water used	Quantity of drug for 100ml of water	Quantity of kwatha
1	Fresh	Volume wise	3500 g (12 *Kudava*)	13920ml	25 g	3480 ml
2	Fresh	Weight wise	2304 g	11520 ml (9216 g)	20 g	2880 ml (2304 g)
3	Dry	Volume wise	420 g (12 *Kudava*)	13920 ml	3 g	3480 ml
4	Dry	Weight wise	2304 g	11520 ml (9216 g)	20 g	2880 ml (2304 g)

During the preparation of *kwatha* the major difference seen in dry drug volume and dry drug weight with its ratio of water. In case of weight wise measurement 20 g of the drug is added to 100 ml of water and where as in volume wise measurement 3 g of drug is added to 100 ml of water. As *bala moola* is having too less weight when compared to its volume, the volume of the drug covers major portion of water and extraction will not be proper.

Quantity of *kalka* used for the preparation

Form of the drug	Media of measurement	Quantity of *kalka* used	Quantity of *taila* taken	Quantity of drug used for 100ml of *taila*	Quantity of *Milk+kwatha* used in ml respectively	Quantity of output	% of loss
Fresh	Volume wise	241g (193ml)	1160 ml	20.77g	1160+3480	1150ml	0.86
Fresh	Weight wise	128 g	853ml(768g)	15 g	853+2880	666ml	21.92
Dry	Volume wise	212g (193ml)	1160 ml	18.27g	1160+3480	1020ml	13.72
Dry	Weight wise	128 g	853ml(768g)	15 g	853+2880	722ml	15.35

Regarding the yield, more difference was found in fresh form of the drug than dry one. The yield was more when the drug and oil are taken in volume measurement.

Limitation of the study: The major problem during volume wise measurement is the particle size of the drug to be taken for the measurement. In *Samhitha* 4 *pala* is considered to be 1 *Kudava*, but for the measurement of *pala* is given as 1 *bilva pala* (weight/volume?). In large scale preparation whether *prasta* can be used for solid measurement? But *prasta* word is never seen for solid measurement (as4 *Kudava= 1prasta*). Quantity of dry form of drug is less when it is taken in volume wise measurement. So the efficacy of the drug must be studied before its application.

CONCLUSION

The size of the *Kudava patra* is mentioned in *Sharngadhara Samhita*, according to which the measurement has to be taken in volume not the weight of the substance. Volume wise measurement will be more precise even in light weight drugs and also during the preparation of *Kshara* to make adequate quantity of water necessary for better extraction.

ACKNOWLEDGEMENT

I express my deepest gratitude to Dr. B. V. Prasanna, Prof and H.O.D of PG studies in Roga Nidana, for structuring and supporting for this project. The project had received unconditional support from Dr. Prabhakara Upadhyaya Renjal, Prof and H.O.D. of PG studies RS & BK. I am thankful to Dr. Muralidhar Sharma, Prof of Shalya Tantra for the guidance during the Pharmaceutical Preparation. The work would have not completed without the support of Pg scholars Dr. Bijo Babu, Dr. Krishna Kumar, Dr.Liju, Dr. Swetha, Dr. Sebastian, Dr. RiyaVarghese, Dr. Sneha Pai, Dr. Tulasi, Dr. James. S.D.M.College of Ayurveda, Udupi.

REFERENCES

1. Kautilya, ArthaShatra, with Hindi translation by Vachaspati Gairola, Chukhamba Vidyabhavana ,Varanasi, U.P., 1st edition, 2009, pp830, page no.175.

2. Amarasimha, Amarakosha with commentary of Ramashrmi by Bhanuji Diksita, Hindi commentary by Haragovinda Shatri Chukhamba Sanskrit Sansthan,Varanasi, U.P., 1st edition 1997, pp668, page no.438.
3. Sushruta, Sushruta Samhita with Nibandhasangraha Commentary of Dalhana, Chukhamba Orientalia,Varanasi, U.P.,2005, 6th edition, pp 824,page no. 508.
4. Sharanghara, Sharanghara Samhita with commentary of Adhamalla's dipika and Kasiram's gudartha dipika, Chukhamba Orientalia,Varanasi, U.P.,2005, 6th edition, pp 398,page no. 9.
5. Amarasimha, Amarakosha with commentary of Ramashrmi by Bhanuji Diksita, Hindi commentary by Haragovinda Shatri Chukhamba Sanskrit Sansthan,Varanasi, U.P., 1st edition 1997, pp668, page no.440
6. Agnivesha, Charaka Samhita with *Ayurveda* Dipika commentary of Chakrapanidatta, edited by Jadavji Trikamji Chukhamba Orientalia,Varanasi, U.P., 2009, pp 768, page no.632.
7. Sharanghara, Sharanghara Samhita with the commentary ofAdhamalla's dipika and Kasiram's gudartha dipika, Chukhamba Orientalia,Varanasi, U.P.,2005, 6th edition, pp 398,page no.11.
8. Sushruta, Sushruta Samhita with Nibandhasangraha Commentary of Dalhana, Chukhamba Orientalia,Varanasi, U.P.,2005, 6th edition, pp 824,page no. 508.
9. Sharanghara, Sharanghara Samhita with the commentary ofAdhamalla's dipika and Kasiram's gudartha dipika, Chukhamba Orientalia,Varanasi, U.P.,2005, 6th edition, pp 398,page no. 213.
10. Gangadhara Rai, Ayurvediya Paribhasha with Vaidya Prabha Hindi Commentary by Indradeva Tripathi, Chukhamba Orientalia,Varanasi, U.P.,1982, 1st edition, pp 105, page no.28.

CORRESPONDING AUTHOR

Dr. Seema M. B.
Prof. of Rasashastra and Bhaishajya kalpana
SDM College of Ayurveda, Udupi – 574118
Karnataka, India
Email: drseemasdm@gmail.com

Source of support: Nil
Conflict of interest: None Declared