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# MATRA NIRDHARANAM – AN ABRIDGEMENT OF DOSE OPTIMIZATION

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#### **ABSTRACT**

As per our science *Chikitsa* depends totally upon four factors which are known as *Chikitsa Chatushpada*. Aushadha is one among the four *Chatuspada* and the proper *Maatra* of *Aushadha* has very great importance in reference to treating diseases as severe fire can't be stopped by little drops, in this same manner little dose of medicine can't be able to treat disease completely. As more amount of water can damage the crop, in the same manner increased dosage of medicine may harm body or gets excreted by *Malamarga*. Whereas, if it is properly used in *Samyak matra*, it cures diseases. It indicates that only required dose of medicine is supposed to be administered to the patient.

The Matra depends on various factors like Dosha, Agni, Bala, Vaya, Vyadhi, Dravya, Bala, Satva, Desha and Kostha etc. So, one must consider all these factors before fixing the Matra of the Aushadha. The Matra described in Ayurveda has been correlated to the Posology of the modern pharmacology. Posology is derived from the Greek word "poses" means how much and "logos" means science, so Posology is the branch of medicine/pharmacy dealing with doses.

keywords- Bheshaja Matra, Matra Nirdharanam, Aushadha Matra.

#### INTRODUCTION

In Ayurveda, the *Matra* has been mentioned in different *Samhitas* such as *Charaka*, *Susrutha*, *Sharangadhara* and *Kashyapa Samhitas*. *Charaka* in *Matrashitiyaadhaya* described *Matra* in relation to intake of food as, "the amount of food which get digested as well as metabolized in proper time, without disturbing the equilibrium of *Dhatus* and *Doshas* of the body.<sup>1</sup>

*Chakrapani* in his commentary described *Matra* as "Either the *Ahara* or *Aushada* when taken in proper quantity it produces good effect. Also, it doesn't cause any undesired effect when taken in proper quantity".<sup>2</sup>

#### CLASSIFICATION OF MATRA

Chakrapanidatta classified Matra into

1. Aahara Matra, 2. Vyayama Matra and 3. Aushada Matra.

Aushadha Matra can be divided into

- a. *Matravat Ausadha* When any *Aushadha* or *Ahara* is taken in correct quantity is beneficial or suitable to person. It should act fast, easily metabolized and should not cause any harm to the body.<sup>3</sup>
- b. Visamamatravata Ausadha When any Aushadha or Ahara is taken in improper quantity is not beneficial to person.

Further *Vismamatravat Aushdha* is divided into, *Hina Matra*- Unable to treat disease and *Atimatra* - Cause the vitiation of *Tridoshas* leading to other undesired results or which may harm the body and even gets excreted by *Malamarga*.<sup>4</sup>

#### SPECIAL MATRAS

<u>Vardhamana Matra</u>- It is a special *Matra* to advise the drug in excessive dose by making the biological platform ready to assimilate the greater dose of the same drug gradually, and to avoid its withdrawal symptoms by decreasing it gradually. Example: *Vardamana Pipalli, Parpati Kalpa Prayoga etc.* 

<u>Hrisiyasi Matra</u> - It is something like test dose. In *Snehapana*, *Vagbhata* and *Susruta* described *Hrisiyasi Matra* to know the *Agnibala* of patients before fixing the dose.

#### EFFECT OF VARIOUS FACTORS ON MATRA

Matra can be decided only after considering the following factors.<sup>5</sup>

1	Vaya
2	Bhesaja
3	Bhesaja Kalpana
4	Kala
5	Satmya
6	Prakriti
7	Desha
8	Kostha
9	Agni
10	Satva
11	Bala
12	Rogavastha
13	Dosha
14	Prayoga marga



#### DETERMINATION OF MATRA AS PER THE AGE

#### ACCORDING TO SUSRUTHA DOSE FOR CHILDREN IS AS FOLLOWS:

Table No.1: Dosages According to Condition of Child.<sup>6</sup>

AGE & CONDITION OF CHILD	MATRA
Ksirada	Ungliparvadvaya ghrahna samita
Ksiraanada	Kolasthi
Annada	Kola Samita

#### AS PER CHARAKA

*Doshas, Dhatus* and *Malas* in children are *Aparipakva* in comparison to the adults; the drug given to child must be of low potency, small in dose as well as less frequency of administration.<sup>7</sup>

#### ACCORDING TO ACHARYA KASHYAPA

#### MATRA OF LEHYA<sup>8</sup>

For *Navajata* as *Vidangaphalatulya*, afterwards the above dose is gradually increased. The maximum dose should not exceed the weight of *Amalakiphala*.

#### DOSE OF GHRITA 9

Table No.2: Showing dose of Ghrita

CONDITION	MATRA
In newly born	Kolasthi
After 5 or 6 days	Slightly more
After 20 nights	Kolardha
Till one month	Kola matra
2 nd month	More than kola
3 rd month	2 Kola
4 th month	Shushk Amlaki
5 th/6th month	Aadra Amlaki
7 th/8th month	More than Aadra Amlaki

Till 8 months the drug quantity should be 1/4th to that of *Sneha Kalpana* and should be given according to disease.

After 8 months drug should be mixed with water and given.

As per *Acharya Kashyapa*, Keeping the exceptions aside, the dose of drug of old person is that of persons of sixteen years of age. Afterward, it gradually decreases and for hundred or more than hundred years of age, the dose is like *Ksheerannada* is described.

#### ACCORDING TO ACHARYA SHARANGADHARA

Table No. 3: Showing dose for *Churna* and *Kalka*. 10

AGE	MATRA
1 month	1 Ratti
2nd month -1 year	Increase by 1 <i>Ratti</i> every month which will be equal to 1 <i>Masha</i> at 12th month
1 year- 16 year	Increase by 1 <i>Masha</i> every year
16- 70 years	This will be equal to 16 Masha
After 70 years	Decrease slowly as that of child dose

Increase the dose to 4 times for Kwatha.

#### DOSAGES OF VARIOUS KALPANAS

#### AS PER KASHYAPA

Table No.4: Showing dosages of various Kalpanas as per Kashyapa

	Deepaniya	Agraparva anguli grahya
Churna	Jeevaniya,	2 times of
	shamshamaniya	Deepaniya
	Vaman/virechan	½ of Deepaniya
	Deepaniya	1 Aksha/ 12 g
Kalka	Jeevaniya,	2 Aksha / 24 g
	shamshamaniya	
	Vaman/virechan	½ Aksha /6 g
	Doshanashaka	2 Prasriti/ 192 ml
Kwatha	Jeevaniya,	1 Prasriti/ 96 ml
	shamshamaniya	
	Vaman/virechan	2 Prasriti/ 192 ml

## **DOSAGE OF KAASTAUSHADHIS**

Table.No.5: Showing dosage of Kaastaushadhis as per Sharangadhara

SL.NO	KALPANA NAME	MATRA
1	Svarasa ( <mark>ardra</mark>	½ <i>Pala / 24</i> ml
	draya)	1 <i>Pala / 48</i> ml
	Svarasa (sh <mark>ushk</mark>	1 <i>Pala / 48</i> ml
	dray <mark>a)</mark>	
	Putpaka Svarasa	
2	Kalka	1 <i>Karsha / 12</i> g
3	Kwatha	2 <i>Pala / 96</i> ml
4	Hima	2 <i>Pala / 96</i> ml
5	Phanta	2 <i>Pala / 96</i> ml
6	Churana	1 <i>Karsha / 12</i> g
7	Vati	1 <i>Karsha / 12</i> g
8	Avaleha	1 <i>Pala / 48</i> ml
9	Ghrita	1 <i>Pala / 48</i> ml
10	Taila	1 <i>Pala / 48</i> ml
11	Asava - Arishta	1 <i>Pala / 48</i> ml

### **DOSAGE OF RASA DRAVYAS**

Table No.6: Showing dosage of Rasa Dravyas as per R.T and R.R.S

SL.NO	KALPANA NAME	MATRA
1	Abharaka bhasma	1-2 Ratti
2	Vaikranta bhasma	1/24 -1/11 Ratti
3	Makshik bhasma	½- 2 Ratti
4	Vimala bhasma	½ - 2 Ratti
5	Shuddha shilajatu	2 - 8 Ratti
6	Shuddha gandhak	1 -8 Ratti

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7	Shuddha gairik	2 – 4 Ratti
8	Kasis bhasma	½ - 2 Ratti
9	Shuddha safatika	2 – 4 Ratti
10	Hartala bhasma	½ - ½ Ratti
11	Shuddha Mana shila	1/32 – 1/16 Ratti
12	Shuddha gauripashan	1/120 – 1/30 Ratti
13	Shuddha navasadara	2- 8 Ratti
14	Kaparda bhasma	2 Ratti
15	Godanti bhasma	1- 3 Ratti
16	Shringa bhasma	1 -2 Ratti
17	Shukati bhasma	2 Ratti
18	Shankha bhasma	2 Ratti
19	Kukkutand tvak bhasma	1- 2 Ratti
20	Svarna bhasma	1/8 -1/4 Ratti
21	Rajata bhasma	½ - 1 Ratti
22	Tamra bhasma	1/8 – 1 Ratti
23	Lauha bhasma	½ - 2 Ratti
24	Mandura bhasma	½ - 2 Ratti
25	Naga bhasma	½ - 1 Ratti
26	Vanga bhasma	1 -2 Ratti
27	Yashad bhasma	½ - 1 Ratti
28	Kamsya bhasma	½ - 1 Ratti
29	Hiraka bhasma	1/32 – 1/16 Ratti
30	Pravala bhasm <mark>a</mark>	1/2 - 2 Ratti
31	Mukta bhasma/P <mark>ishti</mark>	1/4 -1 Ratti
32	Shuddh <mark>a jaypal</mark>	1/8- ½ Ratti
33	Shuddha b <mark>hallata</mark> ka	1-3 Ratti
	THE RESERVE AS A SECOND PARTY OF THE PARTY O	1 7000

# FEW YOGAS WITH ITS SPECIAL MATRA

Table No.7: Showing few Yogas with its special Matra

AUSHADHA YOGAS	MATRA	INDICATIONS	REFERENCE
Haridra khanda	Half tola	Shitapitta, udarda, kota,kandudadru ,vispota	<i>B. R</i>
Lavangadi vati	1 Valla	Grahaniroga, amajirna, pravahika, jwara, kaphajashula, kusta, amlapittaetc	Ra.Sa.San
Avipathikara	8 Masha	Amlapitta, mala mutra vibandh,	Rasendra
churna	Before and in	agnimandya, 20 types of prameha	chintamani
	between meals	and arsharoga	
Agastya haritaki	2 Haritaki along with 1 karsha of lehya	Kshaya, kasa, swasa, hikka, jwara, aruchi,pinasa.	Ch.Sam
Kamsa haritaki	1 Haritaki along with 2 karsha of lehya	Shwayathu, swasa, jwara, aruchi, meha,hikka, pliha roga,pandu	Ch.Sam
Talisadi churna	½ Masha	Kasa roga	B. R
Saraswata churna	1 Aksha	Unmada	B. R
Ashwagandh aristam	½ Pala	Murcha	B. R
kutajavaleha	1 Karsha	Jwaratisara	B.R

	1 Badara	atisara	Chakra dutta
Kalyanaka Guda	1 Aksha	Grahani roga	B.R
Bhallatakadi	3 Masha	Arsha roga	B. R
modaka Kaishora	1 Chana matua	Vuota vatanalita vuona	Sh.Samhita
Kaisnora guggulu	1 Shana matra	Kusta, vatarakta, vrana, gulma,pramehapidaka,prameha,	Sn.Sammia
gugguiu		udararoga,mandagni, kasa,swasa,	
		etc	
Traiyodashanga	½ Aksha	Vatavyadhi	B. R
guggulu			
Mahavata	1 Nishka	Vatasleshmahara	Ra.Sa.San
gajankusha rasa	CI.	D : 11	D 1
Rajamrganka rasa/	Chatur	Rajayakshma	Bruhat
Mrganka pottali	gunja ½ Ratti	Sannipatajajwara	rasarajasundara Rasa
Trailokya chintamani rasa	(dhanya	Sannipaiajajwara	Rajsundara
eniniamani rasa	dvayam)		Кајѕинаата
Vishama	4 Gunja	Pliharoga, Agnimandya, Krishatha,	B. R
Jwaranthaka loha	. Stillija	Yakrutroga, etc	2.11
Bruhatvata	1 Valla	Vataroga, Pittaroga, increases	B. R
chintamani rasa		virility	
Chandramrita rasa	4 Gunja	Rajayakshma and Kasa	B. R
Hinguleshwara	½ Gunja	Cures Vataja jwara	B. R
rasa			
Kamadugha rasa	2 Valla	Raktavridhi, pittaroga, prameha,	Ra.Y.S
		pra <mark>dara,panduroga,kamala,</mark>	
V a11	1/ D=4:	halimakaetc	D D
Kumarakalyana	½ Ratti	Jwara, swasa, chardi, parigarbhikaroga, grahamdosha,	B. R
rasa		aruchi, etc	
Lakshmivilasa rasa	3 Ratti	Kusta, prameha, nadivruna,	Rasendra
(naradiya)		gudaroga, bhagandhara, slipada,	chintamani
V/		amavata, yakshma, improves sexual	
		vigor etc	
Mugdha rasa	Adult -1/2 to	Sahajaphiranga,	R. T
	2.5 Ratti	Atisara in children	
	Children -aged	,	
	one year and		
	above 1/8 to ½		
	Ratti		
Praval	1 Valla daily	Anaha,gulma , udararoga,	B. R
panchamruta rasa	for 2 weeks	pliharoga, swasa, agnimandya,	
	7.76	ajirna, prameha etc.	2.5
Ramabana rasa	1 Masha	Sangrahani, amavata, agnimandya	B. R
Smriti sagara rasa	1 Masha	Apasmara, Smriti vardhaka	Y. R
Mrityunjaya rasa	4 Mudga Matra	Sarvajwarahara	Ra.Sa.San
Grahani	4 Gunja	Agnimandya, sangrahani, atisara,	Ra.Sa.San
kapat rasa 4	+ Gunja	aruchi	Ka.sa.san
таран таза т	<u>L</u>	WI WCI W	1

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	Vardhaman		
	prayoga-		
	2 -10 Ratti		
Prabhakara vati	2 Valla	All types of hridroga	B. R
Rajapravartini vati	1 Chanaka	Krichraartava, kastaartava	B. R
Amlapittantaka	1 Masha	amlapitta	Rase.sara.sa
loha -1	1 1/10/5/10/	control of the second	
Punarnava	1 Kola	Pandu, shotha, udhara,anaha,	Ch.Chikitsa
mandoora	1 11000	shula, arsha, krimi,gulma	
Agnikumara rasa	1 Masha	Agnimandyajanyashotha, pandu,	Ra.Sa.San
11gmmura rasa	1 masta	arsha, grahani, amajanyarogaetc	Ra.sa.san
Makaradwaja rasa	Yavamatra	Sannipatajajwara,	B. R
Makaraawaja rasa	(½ Ratti)	mandagni,aruchi,rasayana,vajikara	D. K
	(74 Kaiii)		
D . 1	1 17 11	na Come V ( ) i ( )	D D
Bruhat vata	1 Valla	Cures Vata and pitta roga.	<i>B. R</i>
Chintamani rasa			D D
Dhatri loha -2	1 tola	All types of Shula, amlapitta.	<i>B. R</i>
	to be taken		
	before,in		
	between and		
	after meal	band office office of the	
Rasa karpura	1/64 Ratti to	Twak and raktavikaras	R. T
	1/32 Ratti	Atisara, krimiroga, etc	
Rasa pushpa	½ to 2.5 Gunja	General dose	R. T
	2.5 Gunja	Virechana	
	1/8 Gunja	Hikka	
	½ Gunja	Phiranga	
	½ Gunja.	Virechana in children	
Rasa sindura	A.P-upto 5	Jwara, prameha, shula,	R.Yo.Sa
	Ratti	bhagandhara, ksaya, gulma, pandu,	
	R.Y.S - upto 3	agnimandya, kustaetc	
	Ratti		
	Ra.Pr.Su- 1-3		
	Ratti		
	Y.R 1-2 Ratti		
Jalodharari rasa	1 Nishka	Jalodhara	R.Sa.San
Sanjeevani vati	1 Gunja	Ajirna, ama, gulma	Sha.Samhita
Sanjeevani vaii	2 Ratti	vishuchika,	sna.samma
	3 Ratti	sarpadamstra	
	4 Ratti	-	
V1 1		sannipatajwara	D D
Kanakasundara	Chanaka	jwaratisara	<i>B. R</i>
rasa 1	matra	A 7	n n
Arsha kutara rasa	2 Masha	Arsha	B. R
Paribadra avaleha	1 Aksha	Krimi	B. R
Panchamrita rasa	1 Masha	Kasa	<i>B. R</i>
Shwasa kasa	4 Ratti	Hikka,Swasa	<i>B. R</i>
chintamani			
Rasa parpati	1-2 Ratti	General dose	R. T
	5-8 Ratti	Unmada	
	2-8 Ratti	Apasmara	
	8 Ratti	sangrahani	

Saptamrita parpati	1-6 Ratti	Mandagni, swasa, kasa	Ra.Pra.Su
Shweta parpati	2-8 Ratti	Mutrakrichra, mutraghata, ashmari	Sidha
			prayoga
			sangraha
Bola parpati	1-6 Ratti	Rakta atisara, rakta pradara, rakta	<i>Y. R</i>
		arsha, raktapitta	
Malla parpati	½ -1 Ratti	Kaphaja and vataja Jwara jwara	Sidha
		upadrava	prayoga
			sangraha

#### DISCUSSION

Our *Acharyas* have told in depth regarding *Aushada Matra* however in the end all the *Acharyas* talk about application of *Yukti* of *Vaidyas* so ultimately it is the responsibility of *Vaidya* to come up with the *Samyak Aushadha Matra*, since there are lot of confusions in present time hence, I have tried sorting out few aspects regarding *Matra*.

#### **DOSING DEVICES**

Now a days most of the physician prescribe the dose with regards to spoon i.e., teaspoon and tablespoon for most of the *Kalpanas* such as *Churna*, *Avalehya*, *Swarasa*, *Khanda* etc. However, there are many types of spoons available in market which may lead to lot of variation in the dose taken by the patient, this variation is depicted in the table below.

Table No.8:

KALPANA	TEAS <mark>POON TABLESPOON</mark>		
Swarasa	4.5 ml	9 ml	
Kwatha	5.3 ml	9 ml	
Asava	5 ml	10 ml	
Arista	4 ml	10 ml	
Syrup	5 ml	10 ml	
Avaleha	16.7 g	27.09 g	

As we can see from the table, based on different *Kalpanas* the measurement also varies, this difference is based on the difference in the viscosity. But in general, we can consider 1 teaspoon as 5 ml and 1 tablespoon as 10 ml. When it comes to *Churna*, even with the same spoon the measure will vary from a heaped spoon to a flattened spoon as shown in the table below

Table No.9

KALPANA	TEASPOON		TABLESPOON	
Churna	Flattened	Heaped	Flattened	Heaped
	2.65 g	5.05 g	4.66 g	7.96 g

This problem can be rectified at two levels

1. By manufacturing companies – should provide measuring caps and standard measuring spoon along with their product.

2. By the physicians – they can dispense standard measuring glass or spoon along with the medicines.

#### MUDGA AS MATRA

In many formulations we can see *Acharyas* have told *Mudga* as *Matra* eg. *Mrityunjaya rasa* however no measures are given with reference to *Mudga* in *Mana Paribhasha*. So, to define the measure of *Mudga* a small experiment was carried out by measuring 10 *Mudga* on a measuring scale and the average weight of 1 *Mudga* came out to be 59 mg so we can consider 1  $Mudga = \frac{1}{2}$  ratti.

#### AMALAKI AS MATRA

Acharya Kashyapa has mentioned Amlaki Pramana while describing the dose based on the age. Where he has told dose of Ghrita for 4-month-old child equal to the measure of dry Amalaki fruit which increases to wet Amalaki fruit by the age of 5 to 6 months. As there is no reference with regards to Amalaki as Pramana, small experiment was carried out to determine its dose by measuring wet Amalaki and dry Amalaki on measuring scale.

Weight of 10 dry *Amalaki* fruit = 30.33 g, Average weight of 1 dry *Amalaki* = 3 g

Weight of 10 wet *Amalaki* fruit = 181.51 g, Average weight of 1 wet *Amalaki* = 18g

As we can see there is lot of difference in weight of wet and dry *Amalaki* and this much difference cannot be accepted in an age difference of just 2 months so we can infer that we have to consider the size of the *Amalaki Phala* not the weight.

#### **CONCLUSION**

The proper dose of the medicine is very much important in clinical practice to achieve the desired therapeutic efficacy. We know when *Aushadha* is administered in *Samyak Matra*, it cures diseases. If it is administered in *Atimatra*, it may lead to undesired effects or gets excreted by *Malamarga*. Similarly, if it is administered in *Hina matra*, may not be capable to cure the disease. It is the *Matra* only by which *Visha* becomes *Amrta* and *Amrta* becomes *Visha*. Our *Acharyas* have told in depth regarding *Aushada Matra* however in the end all the *Acharyas* talk about application of *Yukti* of *Vaidyas*. So, it is the duty of *Vaidya* to prescribe *Samyak Aushadha Matra* after considering various factors such as *Kaala*, *Agni*, *Roga Bala*, *Rogi Bala*, *Vaya*, *Prakriti*, *Desha*, *Dosha* etc.

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