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Review Article

THE VARIOUS FACTORS AFFECTING *BHESHAJA MATRA* (DOSE) AND THE IMPORTANCE OF *DASAVIDHA PARIKSHA* IN DECIDING THE PROPER *MATRA*

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ABSTRACT

The success of treatment depends on dosage, time and proper administration (*Yukti*). Every wise physician gives importance to these two factors *Matra* and *Kala*, where *Matra* is prime one. *Aushadha* is one among the four *Chatuspada*. If it is properly used in *Samyak matra*, it cures diseases. If it is used in *Atimatra*, it may harm body or excreted by *Malamarga*. Same way if it is used in *Hina matra*, may not be capable to cure the disease. It is the *Matra* only by which *Visha* becomes *Amrta* and vice versa *Ausadha* becomes *Visha.*

The *Matra* depends on various factors like *Dosha*, *Agni, Bala, Vaya, Vyadhi, Dravya, Bala, Satva, Desha* and *Kostha etc*. To take maximum benefit of *Ausadha* one should have to consider these all above while examining the *Atura*. These can be correlated with modern Pharmacology factors like age, weight, surface area, and enzymatic action etc. These factors can be compiled in the *Balacatustaya* namely *Dehabala, Agnibala, Chittabala* and *Rogabala.*

Dasavidha Atura Pariksha is most scientific, complete and competent approach to clinical examination, because it is integration of both *Roga Pariksa* and *Rogi Pariksa*. It elicits an accurate account of *Vyadhibalapramana* and set this against the background of *Aturabalapramana*, which helps in deciding proper *Matra.*

KEYWORDS: *Bheshaja Matra* (Dose), *Dasavidha Parkisha.*

INTRODUCTION

Matra/Dose/Measurement had significant importance from the stone-age period/ancient period. It is seen in the stone-age period that the ancient man had his own way of measuring and counting things. In Ayurveda, the *Matra* has been mentioned in different treatises like *Charaka, Susrutha, Sharangadhara samhitas. Kashyapa* the pioneer of pediatric medicine has well established the pediatric dose.

The *Matra* described in Ayurveda has been correlated to the Posology of the modern pharmacology. **Posology** (Derived from the Greek poses, how much, and logos, science), the branch of medicine/pharmacy dealing with doses.

NIRUKTI

To get complete knowledge of *"matra"*, one should know the meaning of word *Matra.*

Matra- Means

- An affix added to noun in the sense of measuring as much as or as high as etc.
- A measure of any kind, quantity, size, duration, number, degree etc.
- A standard of measure, standard rule
- A unit of measure, a foot
- An element
- A measure of time (in music)
- Measuring as much as
- The full measure of anything

SYNONYMS OF *MATRA*

1. *Rassi* means

- The numbers of figures put down for any arithmetic operation.
- A heap, mass, collection, quantity, multitude.

2. *Pramanam* means

- A measure in general
- Scale, standard

- Size , extent

3. *Manam* means

- A standard of "measure"
- Proof, authority, means of proof

DEFINITION OF *MATRA* AND DOSE

Charaka in *Matrashitiyaadhaya* described *Matra* in relation to intake of food as, "the amount of food which, without disturbing the equilibrium of *Dhatus* and *Doshas* of the body, get digested well as metabolised in proper time; it to be regarded as proper quantity (*Matra*)"[1].

*Chakrapan*i in his commentary described *Matra* as "**Either the *Ahara* or *Aushada* when taken in proper quantity it produces good results. Also it doesn't cause any undesired results when taken in proper quantity" [2].**

According to modern science, "**Dose** is the quantitative amount administered or taken by a patient for the intended medicinal effect" [3].

CLASSIFICATION OF *MATRA*

Chakrapanidatta classified *Matra* into 1. *Ahara Matra*, 2. *Vyaama Matra* and 3. *Aushada Matra.* Here the main importance and preference will be given on *Aushadamatra* i.e. *Bheshajamatra*, because *Aushada* is said second *Pada* of *Catuspada* mentioned by *Charaka*. *Aushadha Matra* may be divided into *Matravat Ausadha* and *Visamamatravat Ausadha*, again *Vismamatravat Aushdha* is divided into *Hina matra* and *Atimatra.*

1. Matravat Ausadha

When any *Aushada* or *Ahara* is taken in correct quantity is beneficial or suitable to person. It should act fast, easily metabolised and should not cause any harm to the body [4].

2. Visamamatravata Ausadha

When any *Aushada* or *Ahara* is taken in improper quantity is not beneficial to person [5]. It is of two types as below.

i. Hina Matra	***ii. Atimatra***
Unable to treat disease	Cause the vitiation of *Tridoshas* leading to other undesired results also death
Does not create any *Dhatu Samyata*	Excreted by *Malamargas* without being absorbed
Usage of *Sodhana Ausadha* in *Hinamatra*, produce *Utklesa* of *Dosha* and *Ayoga Vyapada* i.e. unable to eliminate *Doshas* completely	Usage of *Sodhana Aushadha* in *Atimatra*, causes *Atiyoga* and may result into emergency and risk of life too

SPECIAL MATRAS

Vardhamana Matra

It is a special thinking of Ayurvedic seers to advise the drugs action in excessive dose and to make the biological platform ready to assimilate the greater dose of the same drug gradually, and to avoid its dependency or withdrawal symptoms. Further the gradual increase of dose may reach the deeper tissues in due course of time. Example: *Vardamana pipalli* etc.

Harasiyasimatra

In *Shenapana Vagbhata* and *Susruta* described *Harasiyasimatra* to known the *Agnibala* of patients before fixing the dose, it is something like test dose.

EFFECT OF VARIOUS FACTORS ON *MATRA*

Sharangadhara, said that there is no specific common dose for everyone. Many *Acaryas* mentioned that *Matra* depends on various factors [6], while *Charaka* in *Vimanastana* mentioned that examination of patient is to obtain the knowledge relating to the strength of individual (*Aturabala*) and the intensity of morbidity (*Doshabala*) before the dose is determined [7].

Chakrapani and *Sushruta* described that, the dosage of drug should be administered after considering the strength of the disease (*Vyadhibala*), digestive enzymes (*Agnibala*) and the strength of the body of the patients (*Aturabala*)[8,9]. But according to *Sarangadhara*, it depends upon the individual and should be analyzed only after considering *Kala, Agni, Vayah, Bala, Prakriti, Dosha* and *Desha[10].*

According to *Charaka*, the dosages mentioned with reference to person having moderate type of *Kostha*, age and strength; keeping this standard in view, changes in the dosage could be done according the need, either by increasing or decreasing basing on *Dosha, Agni, Bala, Vayah, Vyadhi, Dravya,* and *Kostha*[11]. All these factors are helpful for *Amsamsa Kalpana* and one can decide the *Matra* of individual for better management.

In modern science also, Every individual differ both in the degree and the character of response that a drug may elicit and, so the optimum dose of drug which produces the desired therapeutic effect varied from person to person. So always drug is described in two ranges.

While compiling all the above references, *Matra* can be decided only after considering the following factors and their correlation with modern parameters

S.No.	Ayurveda	Modern Science
1	*Vaya*	Age , Body weight, Surface area
2	*Bhesaja (Dravya)*	Drug
3	*Bhesaja Kalpana*	Pharmaceutical dosage form and drug physical state
4	*Kala*	Time of administration
5	*Satmya*	Tolerance
6	*Prakriti*	Genetic Factors
7	*Desha*	Diet & Environment
8	*Kostha*	Biological membranes (Distribution)
9	*Agni*	Enzymatic action (Metabolism)
10	*Satva*	Mental emotion & strength
11	*Bala*	
12	*Rogavastha*	Pathological state
13	*Dosha*	
14	*Prayoga marga*	Route of administration

How these all factors are to be considered, it is as follows

1. *Vayah*

Since *Doshas, Dhatus* and *Malas* in children are less in quantity 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 [12].

According to *Susrutha* dose for children is as follows

- ***Ksirada* -** The quantity of medicines should be that which adhere to the lines of the thumb and index fingers and it should be mixed with honey or ghee.
- ***Ksiraanada* -** Medicine made as paste shall be of the size of the seed of *Kola*.
- ***Annada* -** Size of *Kola*.

According to *Kashyapa* [13]

The *Matra* of *Ghrita* for *Navajatasisu* as *Vidangaphalatulya*, afterwards the above dose is gradually increased; the maximum dose should not exceed the weight of *Amalakiphala*.

In *Khilasthana* he mentioned *Aushada matra* as follows

Immediately after birth	:	*Badariphala beeja tulya*
5 -10 days	:	Slightly increased
10-20 days	:	Equal to ½ *Badaripahala*
1 month	:	Equal to 1 *Badariphala*
1-2 months	:	1½ *Badariphala*
3 months	:	3 *Badariphala*
4 months	:	Equal to dry *Amalaki* fruit
5-6 months	:	Equals to wet *Amalaki* fruit
7-8 months	:	More than *Amalaki*

According to *Sharangadhara*

1 month	**:**	*1 Ratti* (125mg)
2nd month- 1 year	**:**	increase by one *Ratti* every month (250 mg-1.5gm)
1 year- 16 year	**:**	increase by one *Masha* every year (1.5 gm – 16.5gm)
16- 70 years	**:**	16.5 gm
After 70 years	**:**	decrease slowly as that of child dose

Age [14]

Newborn infants (pediatric) are abnormally sensitive to certain drugs because of the immature state of their hepatic and renal function by which drugs are inactivated and eliminated from the body. Failure to detoxify and eliminate drugs results in their accumulation in the tissues to a toxic level. The decline in renal and hepatic function in the elderly (geriatric) may slow drug clearance and increases the possibility of drug accumulation in the body and subsequent toxicity. Elderly individuals may also respond abnormally to the usual amount of a drug because of changes in drug-receptor sensitivity or because of age-related alterations in target tissues and organs.

Various rules of dosage in which the pediatric dose was a fraction of the adult dose:

i. Young's rule, based on age:

For calculating doses for children two years of age or older.

$$\text{Dose for child} = \text{Adult dose} \times \frac{\text{AGE}}{\text{AGE} + 12}$$

ii. Cowling's Rule:

For calculating doses for children two years of age or older.

$$\text{Dose for child} = \text{Adult dose} \times \frac{\text{Age at next birthday (in years)}}{24}$$

iii. Fried's Rule for infants:

For calculating doses for infants younger than one year of age.

$$\text{Dose for infant} = \text{Adult dose} \times \frac{\text{Age (in months)}}{150}$$

Body weight [15]

The official usual doses for drugs are considered suitable for 70 kg (150 pounds) individuals. The ratio between the amount of drug administered and the size of the body influences the drug concentration at the site of action. Therefore, drug dosage may require adjustment from the usual adult dose for abnormally lean or obese patient.

To calculate the dose of a drug for children based on body weight:

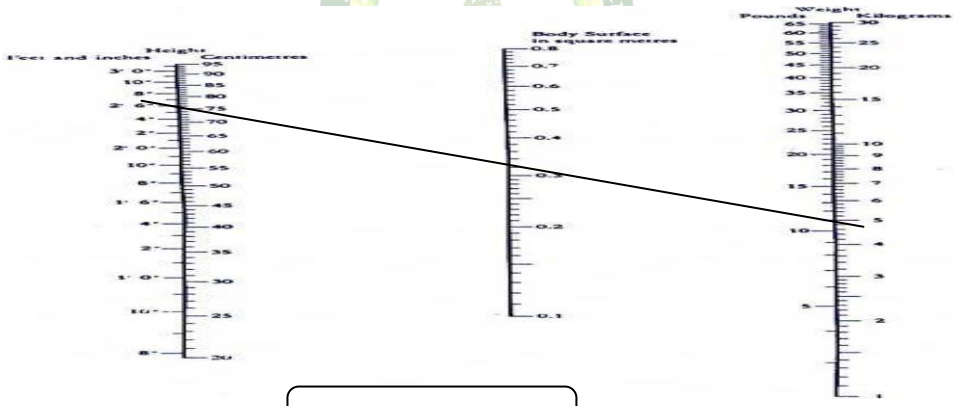
The determination of drug dosage for children on the basis of body weight is more dependable than that based on age.

Clark's Rule:

$$\text{Dose for child} = \text{Adult dose} \times \frac{\text{Weight (in lb)}}{150 \text{ (average weight of adult in lb}}$$

Body surface area [16]

A close relation exists between a large number of physiological processes and body surface area (BSA).The surface area of individuals may be determined from a nomogram composed of scales of height, weight and surface area. Two such nomograms are presented, one for adults and one for children. Surface area is indicated where a straight line drawn to connect the height and weight of an individual intersects the surface area column.



Nomogram

To calculate the dose of a drug for children based on body surface area as related to weight:

Many physicians believe that doses for children should be based upon body surface area, since the correct dosage of drugs seems more proportional to the surface area.

$$\text{Approximate dose for child} = \text{Adult dose} \times \frac{\text{BSA of child (in m}^2\text{)}}{1.73 \text{ m}^2 \text{ (average adult BSA}}$$

If the dose per m^2 is given, **Approximate dose for child = Dose per m^2 x BSA of child (in m^2).**

2. *Bhesaja*

According to *Chakrapanidatta, Matra* also depends on *Bhesaja*, he described *Matra* of drugs depending on *Virya*[17] as follows

- *Tiksna Virya Dravya in Karsa pramana e.g. Sunthi*
- *Madhya Virya Dravya in ½ Pala pramana e.g. Bilva, Agnimantha*
- *Mridu Virya Dravya in Pala pramana e.g. Amalaka*

Excessive use of *Dravya* causes

- *Mridu Virya Ausadha - Daurbalya*

- *Madhyama Virya Ausadha - Dhatuksaya*
- *Tiksna Virya Ausadha - Dhatuksaya*, burning sensation and may create emergency too

Some drugs like *Pippali, Kshara* and *Lavana* are strictly prohibited for over and long term usages. Here dose and durations both are beyond limitations [18]. Hence drugs if taken for longer duration and in over dose, produce undesired effects.

Drug [19]

Drug potency is a measure of drug activity expressed in terms of the amount required to produce an effect of given intensity. A highly potent drug (e.g., morphine, alprazolam, risperidone) evokes a larger response at low concentrations, while a drug of lower potency (ibuprofen, acetylsalicylic acid) evokes a small response at low concentrations. In modern pharmacology, there are certain terminologies used for effect of improper doses like,

- **Adverse Drug Reaction (ADR):** are also results of improper dose of drugs.
- **Toxic effects:** Repeated/large doses produce toxicity.

3. *Bhesaja Kalpana*

"***Bahukalpoprayogitvat***" is a one of the quality mentioned in *Bhesaja guna* and *Bhesaja Matra* depends on *Kalpana. Svarasa* (juice), *Kalka* (paste), *Srta* (decoction), *Sita* (cold infusion) and *Phanta* (hot infusion) are five pharmaceutical preparations mentioned in classics. The potentiality of the medicines of the preceding category is greater than the succeeding ones [20]. So these preparations should be prescribed with due regard to the strength of the patient and seriousness of the disease.

Satva Kalpana of drugs should be given in fewer doses comparative to *Svarasa* of same *Dravya.* "*Saviryata Avadhi*" is also important while prescribing the dose of drug. Dose also depends on "*Saviryata*" of the *Ausadha* – "self life period" and it depends on particular/individual *Dravya* or *Kalpa*. For example generally *Churna's* efficacy get decreased after 2 months and *Asava's* efficacy increases if kept for long time.

Pharmaceutical dosage form and drug physical state

Increasing the surface area of a drug by the reduction of its particle size has a significant effect on the rate of absorption; therefore, the dose can be minimized by reducing the particle size. e.g. Thus, crystalline and amorphous forms of a drug shows a significant difference in the rate of absorption[21].

4. Kala [22, 23]

In *Samhitas* different "***AusadhaPradhana Kala***" is described, when *Ausadhi* is given according to *Kala*, small dose is sufficient and is more effective. *Charaka* gave importance to five types of *Vata* classification and described *Bheshaja kala*, in relation with food.

In various season *Bala* of individual changes. So, *Matra* of *Ausadha* to be used according to *Kala* e.g. in summer *Usna dravya* and in winter *Sita dravya* should be used in low doses otherwise, it may be harmful.

Time of administration [24]

The time at which a drug is administered sometimes influences dosage. This is especially true for oral therapy in relation to meals. Absorption proceeds more rapidly if the stomach and upper portions of the intestinal tract are free of food, and an amount of a drug that is effective when taken before a meal may be ineffective if administered during or after eating.

E.g. Irritating drugs are better tolerated by the patient if food is present in the stomach to dilute the drug's concentration.

5. *Satmya*

If any substance is taken continuously, it may become *Satmya*[25]. Different factors for *Satmya* as *Desha, Kala, Jati, Ritu, Roga, Vyayama, Rasa* etc. are mentioned in *samhitas. Satmya* is a one of the type of adaptability. When a drug is *Satmya* to the body it is required in high doses to produce results. Ex. *Ahiphena, Dhatura* etc.

Tolerance

The ability to endure the influence of a drug, particularly when acquired by a continued use of the substance is called tolerance[26]. Tolerance occurs commonly in such drugs e.g. antihistamines, narcotic analgesics. Normal sensitivity may be regained by suspending the drug administration for a period of time.

The development of tolerance can be minimized by:

- Initiating therapy with the lowest effective dose.
- Avoiding prolonged administration

6. *Prakriti*

Prakriti or constitution of the body is prime important for deciding the drug and the *Matra* of drug in a diseased or normal state. In *Charaka Samhita*, it is quoted that, if person of *Vata Prakriti* take *Vata Prakopaka Ahara*, that too in low quantities, *Ahara* itself aggravates *Vata* leading to *Vatik* disorders and vitiate the body [27]. In the same way if *Pitta* and *Kapha prakriti* person takes much *Usnaahara* and *Sita Ahara* respectively, leads to *Pittika* and *Shlesmic vikaras*. If *Pitta prakriti* person takes *Matradhikya* of *Tiksna dravya* it vitiates *Pitta* and cause *Paittika* disorders. e.g. Intake of *Gandhaka, Somala* by *Paittika prakriti* people leads to boils etc all over the body or mouth.

Species and Race (Genetic factors)

Dose of a drug that produce the same effect may vary 4- folds among different individuals beacuse of different rate of metabolism due to difference in amount and isoform pattern of drug metabolizing enzmes and difference in target organ sensitivity. Afro-americans require higher dose of atropine and ephedrine than mongols. Pharmacogenetics is

concerned with genetically variations in drug responses. Patients with hereditary metabolic disorders rarely show disturbance in the metabolism of drugs, due to microsomal enzyme system for example G-6PD deficiency leads to heamolysis with primaquine and other oxidizing drugs. [28].

7. *Desha*

Desha has been described mainly of two types 1. *Bhumidesha* (land) and 2. *Aturadesha* (Human body) which is useful in deciding dosage. For example, it is difficult to cure patient of *Vata Roga*, staying in the desert region which is also predominant in *Vata*, or the one suffering from *Kapha* residing in marshy land predominant with *Kapha*, Similarly if vitiated *Vata* of colon, which is the site of *Vata* or if any diseases of vital organs, are difficult to treat. So one should take the drug which is of opposite qualities to the *Desha*.

Diet and Environment [29]

Type of diet can alter drug absorption. Medicines are usually taken after meal to reduce the risk of gastric irritation. Alcohol also induces hepatic enzymes and causes rapid metabolism of certain drugs. On the other hand, hepatic injury due to alcohol can increase sensitivity to drugs. Exposure to insecticides, carcinogens, tobacco smoke, charcoal etc induce drug metabolism and setup in which drug taken alter drug action for example hypnotics works better when taken at night in quiet surroundings.

8. *Kostha*

Kostha plays very important role in deciding the *Matra* e.g. when the *Virecana dravya* is given to a *Krurakostha* person it should be given in higher doses. In the same way for *Mrdukostha* person, smaller quantity is enough to produce desired effect [30].

Biological membranes (Distribution) [31]

Once a drug enters into systemic circulation by absorption or direct administration, it must be distributed into interstitial and intracellular fluids. Each organ or tissue can receive different doses of the drug and the drug can remain in the different organs or tissues for a varying amount of time. The distribution of a drug between tissues is dependent on vascular permeability, regional blood flow, cardiac output and perfusion rate of the tissue and the ability of the drug to bind tissue and plasma proteins and its lipid solubility. pH partition plays a major role as well.

9. *Dosha & Rogavastha*

In every disease quantity of vitiated *Dosha* varies. So, dose should be given according to *Bala* of *Dosha*. On the other hand if *Doshas'* are not aggravated, low dose of drug would be sufficient. *Matra* also depends on *Doshagati,* because *Doshagati* is responsible for manifestation of *Samprapti*. Proper *Matra* may act on particular path (*Rogamarga*). In *Tiryakagatadosha's* high potency drug in high doses are required than *Kosthagatadosha*.

Pathological state [32]

The effects of certain drugs may be modified by the pathological condition of the patient and must be considered in determining the dose. Presence of Gastro intestinal disorders can alter the absorption of orally administered drugs. E.g achlorhydra decrease asprin absorption b causing ionization. Bioavailability of drugs having high first pass metabolism is increased due to loss of hepatocellur function.

Presence of Disease like myxedema, morphine acts for a much longer time because of the low rate of oxidation. Pulmonary and gastrointestinal disease may also alter pharmacokinetics.

Bhesajaprayoga marga [33]

In our classics different *Prayoga margas* are mentioned like *Vasti, Nasya, Lepa, Abhayantara marga* etc. basing on *Prayoga marga* the dose of the drug may change, example dose of drug administered in *Snehavasti* is more than *Uttaravasti*. In *Nasya karma* we use drugs in *Bindhu pramana* where as in *Vasti* it's in *Prasthas*.

Route of administration [34]

Drugs administered intravenously enter the blood stream directly and thus the full amount administered is present in the blood. In contrast, drugs administered orally are rarely fully absorbed due to the various physical, chemical and biologic barriers to their absorption, including interactions with the gastric and intestinal contents.

Thus, a lesser parental dose of a drug is required than the oral dose to achieve the same blood levels of drug.

10. *Satva & Bala*

The person with *Pravara Satva* and *Bala* can tolerate large dose of *Tiksna dravya*, so one should look after *Satva and Bala* of patient before deciding dose. This can correlated to physical and mental strength of the patient. Drug's efficacy can be affected by patient's expectations and attitude; anxious patients required more general anasesthetics. Placebo can use for condition that cannot be explained on the basis of pathophysiological basis here physician and patient relationship has a major role in treatment with placebo [35].

11. *Agni*

The body constitution of persons is named according to the predominance of *Doshas*. Depending upon their intensity of *Doshas, Agni* located in the body of human beings can be classified under four categories, viz. *Tikshna, Manda, Sama* and *Visama*. Dose of a drug depends upon the Agni of the person.

Matra should be decided looking at the *Agni* of a person, sometimes if *Agni* is very low (*Mandaangi),* it cannot even digest the even *Aushada matra*, which can be compared to the fire, which is very little, if we add ghee to it, though ghee said to increase the fire but in

this case it extinguishes the fire totally. In this way it may leads for many complications.

In the same way, if *Agni* is more *(Tikshnagni*) the little amount of *Aushadha* given get digested there itself without showing the effect on the disease. So the relation of *Agni* and *Matra* is prime.

Enzymatic action (Metabolism) [36]

Drug metabolism is the biochemical modification of pharmaceutical substances or xenobiotics respectively by living organisms, usually through specialized enzymatic systems. Drug metabolism often converts lipophilic chemical compounds into more readily excreted hydrophilic products.

The duration and intensity of pharmacological action of most lipophilic drugs are determined by the rate they are metabolized to inactive products. The Cytochrome P450 monooxygenase system is the most important pathway in this regard. In general, anything that increases the rate of metabolism (e.g., enzyme induction) of a pharmacologically active metabolite will decrease the duration and intensity of the drug action. The opposite is also true (e.g., enzyme inhibition). However, in cases where an enzyme is responsible for metabolizing a pro-drug into a drug, enzyme induction can speed up this conversion and increase drug levels, potentially causing toxicity.

MATRA & BALACATUSTAYA

All the above discussed factors can be compiled in the *Balacatustaya* namely *Dehabala, Agnibala, Chittabala* and *Rogabala* for deciding *Matra*[37]. These four *Bala's* includes various factors which decide *Matra.*

- ***Dehabala :*** *Desha, Kala, Sarira, Sara, Satmya, Vaya, Jati* and *Svabhava*
- ***Agnibala :*** *Agni, Ahara* and *Kostha*
- ***Cittabala :*** *Satva*
- ***Rogabala :*** *Dosha , Rogavastha* and *Bhesaja*

A wise physician closely observes the *Doshas* in their *Prakopa, Samya* and *Kshayaavastha* of disease for *Rogabala*, power of digestion for *Agni bala,* Strength for *Dehabala* and mental faculties for *Cittabala*. In short *Dehabala, Agnibala* and *Cittabala* are important to decide *Matra.*

If Palliative (*Samsamana*) drugs given in more dose neglecting [38]

- The strength of disease (*Rogabala*) - leads to newer diseases after curing the disease.
- The digestive fire (*Agni bala*) - produces indigestion, long stasis in the abdomen and poor digestion.
- The strength of patient (*Dehabala & Cittabala*) - give rise to exhaustion, fainting and toxicity.
- Similarly when purificatory (*Samsodhana*) drugs are also given in more doses it troubles to the patients.

Both these kind of drugs if administered in insufficient quantity do not produce any effect. Hence these should be used in suitable quantity.

- If the patient suffering from disease curable by *Shodhana* process and is weak due to the vitiated *Doshas* then the wise physician should administer *Shodhana dravyas* in mild doses.
- When the *Dosha*s are mobile and the *Kostha* is *mridu*; the strength of the patient not be taken into Consideration as *Shodhanam* is beneficial even though he is weak due to any other cause other *than Doshas (*ex: *Langhana*).
- If the *Dosha* are *Pravritta* and *Kostha* is *Mridu*, *Shodhana* therapy cures the disease, even though the patient is of *Alpabala.*

Hence it is, necessary to take into consideration the strength of the patient and the seriousness of the disease while prescribing these different categories of *Kalpana.*

For example, if the patient is strong enough and the disease is equally serious, the *Svarasa* preparation of the drug will be eminently useful than other preparations.

Kalpana* and *Matra* According to *Bala

	Sneha & Kwatha	***Guda & Khanda***	***Modaka, Vataka, Leha***	***Guggulu***
Uttamabala	*4 Tola*	*1½ Pala*	*1 Pala*	*12 Masha*
Madhyam bala	*3 Tola*	*1 Pala*	*2 Karsha*	*8 Masha*
Hinbala	*2 Tola*	*½ Pala*	*1 Karsha*	*4 Masha*

IMPORTANCE OF *DASAVIDHA PARIKSHA* IN DECIDING *MATRA*

Charaka Samhita advised to examine *Aturabala* with the help of *Dasavidha Pariksha*. These are the basic parameters, on which the *Dehabala, Agnibala, Cittabala* and *Doṣhabala (Rogabala*) are assessed. *Dasavidha Atura Pariksha* is most scientific, complete and competent approach to clinical examination, because it is integration of both *Roga Pariksha* and *Rogi Pariksha*. It elicits an accurate account of *Vyadhibalapramana* and set this against the background of *Aturabalapramana*.

Prakrityadi nine factors (*Prakrithi, Sara, Samhanana, Pramana, Satva, Satmya, vaya, Aharashakti* and *Vyaama shakti*) of *Dasavidha Aturapariksha* except *Vikriti* are responsible for *Aturabalapramana*. *Vikrti Pariksha,* the second important factor of *Dasavidha Atura Pariksha* is responsible for *Aturadosa-balapramana*.

CONCLUSION

To get maximum benefit of *Ausadha* one should have to consider *Aturabala* and *Rogabala* before deciding the *Aushada matra* with the help of *Dasavidha pariksha.* There is a saying about the dose in general that when poison is taken in minute quantities it acts like *Amrutham* and vis a vis. As a small amount of water cannot extinguish fire, similarly medicine in small quantity cannot cure a disease and irrigation with over flood water is harmful for the crops; similarly medicine in excessive quantity is harmful for the patients. Therefore, after carefully examining the strength of the disease and the medicine, the remedial measures should be administered in a quantity which is neither too large nor too small.

As mentioned earlier, it depends on various factors like *Dosha, Agni, Bala, Vaya, Vyadhi, Dravya, Kostha, Prakriti, Satmyata, Desha, Kala, Bhesaja* etc. Though these factors were mentioned several years ago, they very close to modern pharmacology parameters. It is equally important to ensure the difference between two systems for developing and incorporating doses from new born to the adult based on different rules and the factors that are affecting drug doses.

The scientific approach of, type of the drug, its time and route of administration, its different forms and its dosage and its regimes in *Ayurveda* are highly significant.

I hope that if the clinical scientific validity of *Ayurverdic* drug dosage, its regimes, *Anupana* etc. are done properly, we will come out with outstanding results.

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