

## DELINEATION ON DRUG DOSES IN CHILDREN THROUGH AYURVEDA

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### ABSTRACT

There are special aspects of drug therapy in children. Either their abilities to metabolize drugs mature overtime & their excretory capabilities reach adult levels during or after late infancy, though drug doses can't be similar due to delicate nature and small age of children. In case of children drug should be given in minimum dose and according to their age. On this basis; there are various type of description are available in different *samhita*. Many authors have been given that how should drug be given to children according to their age, nature of child & drugs both and drug material etc. and it is the topic of this review article.

**Keywords:** delicate nature of child, small age of child, minimum dose of drug.

### INTRODUCTION

As all scholars of ancient *Āyurveda* said that all diseases and their treatment are similar in children and in adult except their quantity, which is less in children<sup>1</sup>. So if we treat the child just like adult it may cause side effects or harm to child due to their delicate nature and less amount of *dosa*, *dhatu* etc. So according to disease, the dose of drug should be minimum in children and drug should be according to the nature and age of the children. Many authors described the method for the calculation of drug doses in children. They also described type of drug, their *anupan*, doses, and route of drug which should be given in children.

#### Methods for calculating the doses of drugs<sup>2</sup>:-

1. Breast fed (*kṣirāda*) or a baby older than one month should be given the drugs in doses of one pinch.
2. The *kṣirānnāda* should be administered the drug in doses equal to the size of stone of plum fruit (*Kolāṣṭhi*).
3. *Annāda* child is to be given the drugs in the quantity equal to the size of plum fruit (*Kola*).

The doses of drugs should be increase with increasing age except in weak & old age<sup>3</sup>.

**Table 1:** Dosage schedule prescribed by *Suśruta*<sup>4,5</sup>

Stages of childhood age	To whom drug should be administered	Doses of drugs
<i>Kṣīrāda</i> (upto 1 year)	Child + <i>Dhātrī</i>	Amount held on terminal phalanx of index finger
<i>Kṣīrānnāda</i> (1-2 years)	Child + <i>Dhātrī</i>	Equal to stone of plum fruit ( <i>Kolāṣṭhi</i> )
<i>Annāda</i> (> 2 years)	Child	Equal to plum fruit ( <i>Kola</i> )

In *Annāda* children, drugs should be administered along with food. By this way physician can maintain the strength and *agni* (metabolism) of child.

The main treatise devoted to the subject (*Kaumarbhṛitya*) is *Kaśyapa Saṃhitā*. This text contains very detailed & scientific description of fundamentals of drug therapy. *Kaśyapa* has decided various criteria for calculation of doses of drugs. He has also described doses of different recipes like *Cūrṇa*, *kwāth*, *sneha* etc.

In case of newborn baby, the drug should be prescribed in the quantity equal to a fruit of *Viḍanga* with honey & *ghṛta*. The doses should be increased simultaneously with the age of the child, but in any case it should not exceed the quantity equal to a wet (fresh) *āmalaka* (fruit)<sup>6</sup>.

After that he also said that, in children of less than 12 years of age the medicine should not be used solely. Every day solely used medicine destroys the strength & longevity of very delicate children, hav-

ing dissimilarity in status of life, *doṣas*, *dhatus*, strength & *ojas*<sup>7</sup>.

#### Calculation of doses according to age of child<sup>8</sup>:-

1. The dose of *ghṛta* for immediately born is equal to stone of a small plum (*kolāṣṭhi*); after wards up to 5 or 10 days, it becomes slightly more; then up to 20 days or nights of life, it becomes equal to half of plum fruit.
2. Dose should be equal to one plum fruit (*kolā*) at the age of one month, somewhat more at two month of age and equal to two fruits at the age of three months.
3. In fourth month, it is said to be equal to dry fruit of *āmalaka*; in fifth & sixth month is equal to green fruit (i.e. fresh) of *āmalaka*. In seventh and eighth month it should be more than this.

The dose of herbal medicines should be equal to one quarter of the dose of *ghṛta*, up to the age of eighth month. After this age the drug should be prescribed after dissolving in water<sup>9</sup>.

**Table 2:** Dosage schedule of *ghṛta* according to age

Age	doses	Remarks
Newborn	Equal to stone of small plum fruit	Upto the age of 8 <sup>th</sup> month, drug should be prescribed with honey ( <i>madhu</i> ) and <i>ghṛta</i>
Upto 5 or 10 days	Slightly more than above	
10 to 20 days	Equal to half plum fruit	
upto 1 month	Equal to one plum fruit	
1-2 months	Slightly more than the dose of 1 month	
3 <sup>rd</sup> month	Equal to two plum fruit	
4 <sup>th</sup> month	Equal to a dry <i>Āmalaka</i>	
5 <sup>th</sup> & 6 <sup>th</sup> months	Equal to a wet (fresh) <i>Āmalaka</i>	
7 <sup>th</sup> & 8 <sup>th</sup> months	Slightly more than one wet <i>Āmalaka</i>	
1 to 16 years	According to strength of <i>Agni</i>	Administered after dissolving in water

**Dosage schedule according to strength of Agni<sup>10</sup>:-**

1. The digestive power (*Agni*) of *kṣirānnāda* having predominance of *Vāyu*, is irregular due to consumption of mixed diet, that is why the doses of *ghṛta* is dependent upon his *agni*.
2. While in *annāda* digestive capacity is much more balanced than the *kṣirānnāda*. Due to this reason, the doses should be equal to an *āmalaka*. Doses for these children (both *kṣirānnāda* & *annāda*) may be increased according to age & strength of *agni*.

**Dosage schedule for different recipes<sup>11</sup>:-**

In the treatment according to quantum of disease or strength of diseased, the drug equal to fistful, one *prakuñca*, one *prasṛta* or one *añjali* should be given.

**1. Doses of cūrṇa (powder) :**

The dose of appetizing powders (*dīpanīya*) should be as much as can be held on the terminal phalanx of index finger. Double of this is of life promoting (*jīvanīya*) & pacifying (*saṁśamnīya*) powders; but it should be half for the powders used for emesis (*vamana*) & purgation (*virecana*).

**2. Doses of kvātha (decoction) :**

The decoction, prescribed for balancing *doṣas* should be given in dose of two *prastha* (of powder

of drug) along with the mixture of sugar & honey. While that for emesis & purgation should be given in dose of one *prastha*. For life prolongation and pacification the dose should be two *prastha*.

**3. Doses of kalka (paste) :**

The appetizer paste should be given in dose of one *akṣa* (*karṣa*). It is double in life prolonging & pacifying paste but half of appetizer paste, for emetic and purgative paste.

**4. Sneha (oleaginous substances) :**

Doses of *sneha* for emetic and purgative purposes are as follows –

- a) For the purpose of emesis due to *kapha*, the dose of properly medicated *ghṛta* with emetic drugs should be given in sufficient quantity (i.e. according to *agni bala*).
- b) On vitiation of *pitta*, the purgation should be induced by medicated *ghṛta* with purgative drugs, in the half dose of that used for emesis.
- c) In emesis & purgation due to *kapha*, the dose of *ghṛta*, (medicated with *dīpanīya*, *samaka* and *jīvanīya* drugs) should be equal to previous one.

The dose of *kumbhasarpi*, according to the age & strength of child must be four times, one third, three fourth or half of ordinary *ghṛta*.

**Table 3:** Dosage schedule of *Kaśayapa*, on the basis of different recipes

Recipes	Special indications	Doses
<i>Cūrṇa</i>	i. <i>Dīpanīya</i> ii. <i>Jīvanīya</i> & <i>Samśamnīya</i> iii. <i>Vaman</i> & <i>Virecanīya</i> (in <i>tridoṣaghna kaśāyas</i> )	Equal to terminal phalanx Equal to 2 terminal phalanx Half of the phalanx (2 <i>prasṛta</i> )
<i>Kwātha</i>	i. <i>Vaman</i> & <i>Virecanīya</i> ii. <i>Dīpanīya</i> & <i>Samśamnīya</i>	1 <i>Prasṛta</i> 2 <i>Prasṛta</i>
<i>Kalka</i>	i. <i>Dīpanīya</i> ii. <i>Jīvanīya</i> & <i>Samśamnīya</i> iii. <i>Vaman</i> & <i>Virecanīya</i>	1 <i>Akṣa</i> 2 <i>Akṣa</i> ½ <i>Akṣa</i>
<i>Sneha</i>	-	According to strength of <i>agni</i>

*Kaśyapa* has mentioned that any drug should not be suddenly discontinued even after complete cure of the disease. The dose of drug should be reduced gradually and maintenance dose should be continued for some more days even after recovery<sup>12</sup>.

*Yogaratanakara*, *sharṇdhara*, *cakrapāṇi* has simplified the calculation of doses. At the age of one month, the child should be given a drug (*cūrṇa*, *kalka*, *avaleha* etc.) in the dose of one *ratti* (i.e. 125mg) and administration with *madhu*, breast milk,

sugar or *ghṛta*. Then dose should be increased by one *ratti* with every month till one year of age. By this, at the age of one year the dose will be 12 *ratti* (1.5gm).

After the age of one year, the dose should be increased one *māsā* (i.e. 1gm) every year up to sixteen years of age. This dose should be stable till the age of 70 years, after that it have to be reduced.

In case of decoction the dose of above mentioned drugs should be taken in four times of above mentioned dose.

### Congenial and Non-congenial

*Kaśyapa* has described that the person using congenial attains the disease Free State, the one using non-congenial is oppressed by diseases immediately<sup>13</sup>. Almost similar opinion albeit in different words has been given by other authors also. *Caraka* has mentioned that the child becomes healthy very shortly by using the appropriate drugs and congenial diet.

Once the child returns to his normal health, he should follow various rules of hygiene. For this purpose the child should be advised diet and daily routine opposite to place, time and the nature of child itself. If anything is unwholesome to the child, which should be stopped gradually, because the congenial substances may become uncongenial after some times. Use of wholesome substance provides health & strength to the child<sup>14</sup>.

Children should be given milk with sweet articles (*madhura dravya*). It should be diluted before offering to the child. The articles which are much unctuous (*snigdha*), much dry (*rūkṣa*), much hot (*uṣṇa*) and much sour (*amla*) in property ; of *katu vipaka* & other heavy (*guru*) articles (drugs, drinks & foods) should be avoided<sup>15</sup>.

*Vangasena* has also prescribed to give milk to the ill child. He opines that when all types of food are restricted to the child then also, the physician should never advise to stop breast milk. In inadequacy of breast milk, goat's milk or cow's milk or any other milk, having same properties should be prescribed<sup>16,17</sup>.

*Vāgbhaṭa* has mentioned that wholesome diets & routine is actually congenial for children like for *kṣirāda* child milk is best congenial, for *kṣirānnāda* milk & food while for *annāda* food is best congenial<sup>18</sup>.

*Yogaratanakara* has described congenial for children in the diseased state and said that all congenial mentioned in different diseases are also congenial for children in their diseased state<sup>19</sup>.

The above descriptions have inference that for speedy recovery adequate nutrition should be mentioned during the course of illness.

### CONCLUSION

By this article we can say; to treat child dose of drug is an important tool. If it would be incorrect there are much more harm to the child. Drug dose should be decided on the basis of age, weight, *agni* and nature of child. Beside these various author also described the dose of different recipes of drugs and doses of *anupan* according to age and *agni* of child. These all are very useful information while treating a child, to maintain normal health and to help in providing normal growth and development to the child.

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