



## “A Review Over The Mode of Action of Shirish Twaka Churna In The Management of Childhood Asthma In Children”

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### ABSTRACT

Asthma which is the most common chronic illness of the childhood is also the most frequent cause for visits to paediatricians. Among children and adolescents aged 5-17 years, asthma accounts for a loss of 10 million school days annually. Asthma affects an estimated 300 million individuals worldwide. The prevalence is 8-10 times higher in developed countries than in the developing countries.

Its management includes bronchodilators, mast cell stabilizers, leukotriene modifying agents, antihistaminics and corticosteroids apart from avoidance of allergens but these drugs are associated with many adverse effects like tremors, tachycardia, weight gain, growth suppression etc. In spite of all, these drugs are used but not capable of curing this notorious disease completely. According to *Ayurveda* the management of asthma should comprise of drugs possessing *Ushna*, *Vatanulomak*, *Vata-kapha shamak*, *Amapachak*, *Sroto-shodhak*, *Kapha nissarak* properties. So considering these facts, *Shirish Twaka churna* can play a great role in treating the disease.

**Key words:** Asthma, *Vatanulomak*, *Shirish Twaka Churna*, *Amapachak*.

### 1.Introduction:

The problems of children differ considerably from those of adults from the point of view of different nature and types of many disease entities as well as different diagnostic criteria and medical therapeutics also. Air, food and water are imperative to the survival of life. Air is of key importance. Respiration or breathing in and out is evidence of life. This function is very necessary to derive the happiness and benefits of one's life and is carried out by *Pranavaha srotas* since the time immemorial man has been in steady attempt to find the solution for the life threatening and distressing disorders which affects the human race one of such conditions is *Tamakaa Swasa* (Bronchial asthma) causing an impediment to one's respiratory functions. The prevalence of asthma is increasing, especially in children. Annually, the World Health Organization (WHO) has estimated that 15 million disability-adjusted life-years are lost and 250,000 asthma deaths are reported worldwide (Global strategy for asthma management and prevention.<sup>1</sup> Approximately 500,000 annual hospitalizations (34.6% in individuals aged 18 y or younger) are due to asthma.

In most children, asthma develops before age 5 years, and, in more than half, asthma develops before age 3 years. Among infants, 20% have wheezing with only upper respiratory tract infections (URTIs), and 60% no longer have wheezing by age 6 years. As Martinez et al have pointed out; however, many of these children are "transient wheezers" whose symptoms subside during the preschool or early school years. They tend to have no allergies, although their lung function is often abnormal. These findings have led to the idea that they have small lungs. Children in whom wheezing begins early in conjunction with allergies are more likely to have wheezing when they are aged 6-11 years. Similarly, children in

whom wheezing begins after age 6 years often have allergies, and the wheezing is more likely to continue when they are aged 11 years. Before puberty, the prevalence of asthma is 3 times higher in boys than in girls. During adolescence, the prevalence is equal among males and females. Adult-onset asthma is more common in women than in men. On basis of clinical symptomatology bronchial asthma appears very close to *Tamaka swasa* described in *Ayurveda literature*.

## 2.Disease Review

*Tamaka swasa* has been described elaborately in both *Brahattrayi* and *Laghutrayi* which indicates its importance as a disease entity. Especially in *Charak samhita* the detailed description of *Swasa roga* is available which incorporates its etiology, pathophysiology and elaborate therapeutic modalities. In *Ayurvedic* texts the five types of *Swasa roga* are described among them *Maha, Urdhwa & Chhinna Swasa* are said to be incurable. *Kshudra Swasa* is produced due to exertion and relieved on rest. *Tamaka swasa* is said to be *Yapya* (palliable) and curable in early stage. So the management described for *Swasa roga* in *Ayurveda literature* is mainly applicable on *Tamaka swasa*.

### 2.1Types of Tamaka Swasa:-

1. PraTamakaa 2. SanTamakaa Swasa

Actually these are the complicated state of the Tamaka Swasa.

**PraTamakaa Swasa:-** If fever and fainting (Murchha) arises in the patient of Tamaka Swasa then it is termed as PraTamaka Swasa. These symptoms suggest that there is involvement of Pitta dosha in PraTamaka. This condition arises due to Udavarta, dust, Ajirna roga, Klinnata (humidity) and suppression of natural urges.<sup>2</sup>

**SanTamaka Swasa:-** When the severity of Tamaka Swasa increases profoundly in Tama and get alleviated instantly by cooling regimens, it is called SanTamaka Swasa. In this condition patient feels himself in deep darkness.<sup>3</sup>

Probably it has also the association of Pitta dosha because it get alleviated by the use of ‘Sheeta guna’ predominant therapy. It may be the complication of Tamaka Swasa.<sup>4</sup>

### 2.2RUPA OF TAMAKA SWASA

Table No.1

S. No.	Rupa	C.S.	S.S.	A.S.	A.H	M.N.	Y.R
1.	<i>Pinsa</i> (Rhinorrhea)	+	-	+	+	+	+
2.	<i>Ghurghurka</i> (wheezing)	+	+	+	+	+	+
3.	<i>Tivra vega Swasa</i> (dyspnea & tachypnea)	+	+	+	+	+	+
4.	<i>Pranprapidakam</i> (tachycardia)	+	-	+	+	+	+
5.	<i>Vegayukta kasa</i> (bouts of cough)	+	+	+	+	+	+
6.	<i>Pratamyati</i>	+	-	+	+	+	+
7.	<i>Shleshmanyamuchyamane bhrisham bhavti dukhitah</i>	+	-	-	-	+	+
8.	<i>Vimokshante muhurt labhate sukham</i> (temporary relief after sputum comes out)	+	-	+	+	+	+
9.	<i>Kanathoudhwansha</i>	+	-	-	-	+	+
10.	<i>Speech difficulty</i>	+	-	-	-	+	+
11.	<i>Anidra</i> (sleep disturbance)	+	-	-	-	+	+
12.	<i>Ashino labhate saukhyam</i> (orthopnea)	+	+	+	+	+	+
13.	<i>Ushnabhinandan</i>	+	=	+	+	+	+
14.	<i>Shyan Swasa peedit</i>	+	+	+	+	+	+
15.	<i>Uchhritaksha</i>	+	-	+	+	+	+
16.	<i>Sweating on forehead</i>	+	+	+	+	+	+

17.	<i>Arati</i> (restlessness)	+	-	+	+	+	+
18.	<i>Vishushkasya</i> (dry mouth)	+	-	+	+	+	+
19.	<i>Muhu Swasa</i> (paroxysm of dyspnea)	+	-	+	+	+	+
20.	<i>Muhu avdhamyate</i>	+	-	-	-	+	+
21.	<i>Vamthu</i> (vomiting)	-	+	-	-	-	-
22.	<i>Trishna</i> (thirst)	-	+	+	+	-	-
23.	<i>Vepathu</i> (tremors)	-	-	+	+	-	-
24.	<i>Annadweshha</i> (loss of appetite)	-	+	+	+	-	-
25.	<i>Jwara</i>	+	+	+	+	-	-
26.	<i>Murchchha</i> (syncope)	+	+	+	+	+	+
27.	<i>Sarvang sweda</i>	-	+	-	-	-	-
28.	<i>Sakapha kasa</i>	-	+	-	-	-	-
29.	<i>ParSwasahula</i>	+	-	+	+	+	+
30.	<i>Moha</i>	+	-	+	+	+	+

### 2.3 Aggravating factors of *Tamaka Swasa* (*Anupashaya*):-

1. Sleep<sup>5</sup>
2. *Megha* (cloudy atmosphere), cold water, *Pragvata* (eastern air)<sup>6(a)</sup>
3. Factors producing *Kapha* dosha<sup>6(b)</sup>
4. Lying position<sup>7</sup>
5. *Raja*, *Dhuma*
6. *Tama*(darkness or *Mansik dosha*)<sup>8</sup>
7. *Durdina*(abnormal atmospheric condition)<sup>9</sup>

### 2.4 *Upashaya* (Relieving Factors):-

1. “*Kaphe heene*”(decreased *Kapha* dosha)<sup>10</sup>
2. Sitting position<sup>11(a)</sup>
3. Hot diet and regimen<sup>11(b)</sup>
4. *Sheetal ahar vihar*(cold regimen in case of *SanTamakaa Swasa*)<sup>12</sup>
5. *Snehana*, *Swedana*
6. *Vamana*
7. The diet, drug or therapy which is *Kaphavata nashaka*, *ushna* and *vatanulomaka*<sup>13</sup>

### 2.5 *Vishishta samprapti* of *Tamakaa Swasaa* :-

The pathology which is particularly related to *Tamaka Swasa*, states when the *Vayu* attains *Pratilomagati* in *Srotas*, it influences neck & head region, and due to this, secretion of *Sleshma* takes place resulting in *Pinasa*, This again causes obstruction and as a result of these “*Ghurgurkha*” or wheezing manifests along with increased rate of respiration.<sup>14</sup>

In *Tamakaa Swasaa* *vata* is *kapha samyukta*, may be through different processes, which ultimately convert in each other

*Vata* is in normal state, and *Kapha* is either vitiated with its own etiological factors like *Sheeta*, *Guru*, *Dadhi*, *Amakshira* etc or *Vishmashana*, *Vishtambhi bhojana* etc can produce *Mandagni* and *Mandagni* produces *Ama* and this *Ama* produce, *Malarupa kapha*. This vitiated *Kapha* in the *Uraha pradesha* causes the obstruction in the normal path of *Vata* (*Prana*) it further leads to *Avaranjanya vata prakopa* and *Pratiloma gati* of *vata* (*Kapha pradhan samprapti*)

*Vata* is vitiated through, its own etiological factors, like *Apatarpana*, *Raja*, *Dhuma*, *Vegavarodha*, etc and by *Dhatukshaya* (due to chronic disorders), vitiated *Vata* causes contraction of *Pranavaha srotasa*. This further produces *Pratishyaya* by excitation of *Kapha dosha*. Thus, leading to the presentation of *Swasaa* (*Vatapradhana samprapti*).

In modern science pathogenesis of asthma is same as *Tamakaa Swasaa*. The parasympathetic reflex loop consists of afferent nerve endings, which originate under the inner lining of bronchus. Whenever these nerve ending are stimulated, due to dust, cold air, fumes etc impulses travel to the brain stem vagal centre then, down, the vagal efferent, path way to again reach the bronchial small airways. Acetyl

choline is released from the efferent nerve endings. This acetylcholine results in the excessive formation of inositol 1,4,5 triphosphate (IP3) in bronchial smooth muscle cells which leads to muscle shortening and this initiates broncho constriction after that, inflammation soon follows leading to a further narrowing of the airway and excessive mucus productions, which leads to coughing & other breathing difficulties.<sup>15</sup>

### 3.Criteria for selecting the drug

In *Ayurveda* bronchial asthma is correlated with *Tamaka Swasa*. It is *Kapha-vata* dominant disease of *Pranavaha srotos*, originated from *Pittasthana*. So the drug which have capacity to break the pathogenesis, arrest the progression and also give symptomatic relief in childhood asthma should be used. It is expected that the drug which posses the following properties may be proved effective for getting above results:

1. Vata kapha shamaka to the view of Doshas
2. Kasa and Swasahar
3. Kapha nissarak
4. Swarya
5. Shothahar
6. Strotoshodhak
7. It should not be so Ushna, Tikshna and Katu that child cannot tolerate it because of their Aparipakva dhatus
8. It should be easily perceptible to child etc.

So viewing above points *Shirish Twaka churna* may produce great result in the therapy of Tamakaa swasa.

#### 3.1 Description Of Shirish (Table No. 2 Pharmacological properties of Shirish)

Text	Guna	Rasa	Vipaka	Veerya	Doshagnata & Prabhav
D.N.	Laghu,	Tikta	-	Usna	-
K.N.	Laghu,Tikshna	Madhur,Tikta, Kasaya	Katu	Anusna	Tridoshar
R.N.	-	Katu	-	Seeta	Vatahar
B.P.	Laghu	Madhur,Tikta ,Kasaya	-	Anusna	Tridoshar

Shirish is Laghu, Madhur-Tikta ras, Ruksha, Slaukshna in guna, Sheet veerya, Katu vipaka & Tridoshsamaka (Database).

#### 3.2Clinical & Experimental studies:

##### Bronchodilator / antihistaminic

1. The effect of decoction of the bark& flowers of *Albizia lebbeck* were studied for its antihistaminic & anti anaphylactic activity. The decoction protected the guinea pig against histamine as well as acetylcholine induced bronchospasm (Tripathi RM,1977).
2. The decoction of *Shirisa* stem bark was found to be effective against bronchospasm induced by histaminic acid phosphate & shown to exert disodiumcromoglycate like action on mast cells. A considerable fall in TLC (P>.01), eosinophill counts (P>0.001), ESR (P>.01) & increase in the level of PEFr (P>.001) were observed. The effect of treatment based subjective parameters cure highly significant (Swamy,GK.et.Al 2000).
3. The butanolic fraction of the aqueous extract of stem bark had immunomodulator effect (Pharmaceut Bio2000).

##### Mast cell stabilizer

In a study the hot aqueous decoction & its butanolic fraction were used to study the ant allergic activity in various models like anti PCA & mast cell stabilizer activity. There were 74 +\_1.5% &

66.1±4.2% inhibition of PCA protection or mast cell against degranulation was 54.33±2.52 & 69.9±4.56 respectively for host aqueous decoction & butanolic fraction. The fractions were also studied for inhibition of schutz date phenomena, where 80.5± 1.17 & 75.33±0.99% inhibition of antigen induced contraction was noticed (Brauce C.G.et .al 200-2001).

### Toxicity

Clinical as well as experimental studies showed the absence of any serious toxicity (Database).

### Probable mode of action of *Shirish*

*Ayurveda* emphasizes on *srotorodha* in the manifestation of *Swasa roga*. *Srotorodha* is the resultant of disturbance in the equilibrium of *Vata* and *Kapha*. Hence drugs which are beneficial in removing the obstruction and maintain the physiological equilibrium of *Vata* and *Kapha* are useful in this condition.

The pharmacokinetic properties of the drug – *Shirish* as per *Ayurveda* will be beneficial in counteracting the exacerbated *Kapha* and *Vata dosha*. By virtue of *Tikta rasa*, *Katu vipaka* and *Laghu guna* the drug shows *Deepana* and *Pachana* properties. The *Agnideepana* and *Pachana* function boosts the metabolism and diminishes the formation of *Ama*. This property of drug is vital in preventing the disease. *Madhura rasa* is said to increase all the *Sharira dhatus*, *Mana* and *Indriya*, alleviate *Vata dosha*, increases the vital strength. *Katu vipaka* increases the overall metabolism. This increases the quality of *Rasa dhatu* and their by the entire status of the body.

*Shirish* by virtue of its *Laghu* and *Tikshana guna*, has *Kapha nissaraka* and *Srotoshodhaka* properties, so it decreases the spasm of bronchi.

*Shirish* has property to inhibit histamine release which obstructs the immediate hypersensitive reaction and prevents histamine as well as acetylcholine induced bhronchospasm (Tripathi RM, 1997).

The immunomodulator activity of the drug is already described in drug review. As per related study the researchers has concluded that immunomodulatory regimen will play a key role in future therapies for allergic disease. These treatment modalities may not only treat allergic disease, but also be beneficial in reducing morbidity and mortality for which it is responsible. (Passalacqua G. Durham SR 2007).

*Shirish* has *Shothahara*, *Vishghna*, *Vedanasthapana* and *Swasaahara* property which reduces the symptoms of Asthma. By virtue of its *Vedanasthapana* property it reduces chest pain during coughing. Relief in dyspnoea and wheezing were because of reducing the barrier in the way of *Pranavayu* by *Samakapha*. The probable mode of action of the drug was because of its *Tridosahar* effect, *Katu vipaka* and *Laghu*, *Tikshana guna*.

The drug was given with honey which itself has good *Kaphahar* action as per classics. It is one of the best suggested vehicles that have *Yogavahi* property which does not interfere with drug property and just transports it. The studies indicate its power to enhance the drug action, which is the best quality for *Anupana*.

### Discussion

Asthma is the most common chronic illness of childhood. The prevalence of asthma is increasing, especially in children. Annually, the World Health Organization (WHO) has estimated that 15 million disability-adjusted life-years are lost and 250,000 asthma deaths are reported worldwide (Global strategy for asthma management and prevention).<sup>16</sup>

Asthma is defined as a disease of lungs characterized by airway obstruction, inflammation and hypersensitivity to various stimuli. The airway obstruction is reversible either spontaneously or with treatment. Reversibility of airway obstruction may not be complete in some patients. Although asthma is a common disease, it is not always recognized that asthma has become the most common chronic disease of childhood. Symptoms of wheezing, coughing and/or shortness of breath are indeed common among infants and children. While these symptoms, when caused by asthma, usually respond well to



appropriate medications, the exact diagnosis is not always obvious early in the evaluation of such patients.

It causes negative effect on children during their critical periods of growth and development. Despite better knowledge of its pathophysiology childhood asthma continues to be under diagnosed and untreated.

In *Charaka samhita* the general *Samprapti* of *Swasa* and *Hikka* is described together. Vitiated *Vata* enters in the *Pranavaha srotas* and provokes *Urastha kapha* producing *Swasa* and *Hikka*.<sup>17</sup> In specific *Samprapti* of *Swasa* *Acharya Dridbala* mentioned that vitiated *Vata* along *Kapha* causes obstruction to *Srotas* and *Vata* itself gets obstructed and moves in abnormal directions producing *Swasa Roga*.

## Conclusion

Increasing prevalence of Bronchial Asthma in children is a global issue of concern due to associated long term compromise in the quality of life. Symptomatology of Bronchial Asthma in children closely resembles with *Tamakaa Swasaa*, which is a *Kapha-vata* pradhan disease involving *Pranavaha srotas* with some *dushti* of *Annavaha* and *Udakvaha srotas*. *Ayurveda* can constitute multidimensional approach for the treatment of Bronchial Asthma. The management of *Swasa* in *Ayurveda* should comprise *Snehana*, *Swedana*, *Vamana*, *Virechana*, *Dhumpana*, *Nasya*, *Ushna*, *Vatanulomak*, *Vata-kapha shamak*, *Amapachak*, *Srotoshodhak*, *Kapha nissarak* and *Rasayana* medication.

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