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AN OVERVIEW OF ANTI ASTHMATIC ACTION OF SHRINGYADI CHOORNA AND ITS INGREDIENTS

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ABSTRACT

Tamak Shwas, often correlated with Bronchial Asthma is a troublesome condition, leaving the person gasping for breath and in some cases it can have dangerous consequences as well. Bronchial Asthma is a major global health problem, which can affect the population irrespective of age, sex, economic status etc. A very few patients need intensive care while most of the patients can be managed effectively in initial stages by Ayurvedic line of treatment. *Shringyadi choorna* is a formulation stated in the textbook of *Chakradatta* and many other texts of *Ayurveda* which contains the most potent ingredients namely *Karkatshringi, Pushkarmool, Shati, Musta, Pippali, Marich, Shunthi* and *Sharkara* which are in totality responsible for its anti asthmatic properties and adding to the potency the anupan dravya are *Guduchi, Vasa, Bilva, Agnimanth, Shyonak, Patla and Gambhari.* In many other Ayurvedic texts *Shringyadi choorna* is enlisted by various *acharyas* with almost similar ingredients. This drug is supposed to help relieve the patient and decrease the burden of intake of allopathic medicine on everyday basis.

KEYWORDS: *Shringyadi, choorna, tamak shwas*, asthma.

INRODUCTION

Tamak means a state of darkness prevails due to wrong movement of *Prana Vayu* where as *Shwas* is the normal breathing. *Tamak Shwas* is one of the five varieties of *Shwas* roga namely *Maha Shwas, Urdhwa Shwas, Chhinna Shwas, Kshudra Shwas* and *Tamak Shwas*

described by *Acharya Charak.*[1] It is mainly a disease of *Pranavahasrotas.*[2] The signs, symptoms and etiopathogenesis of Bronchial Asthma explained in modern science have a lot of similarities with the disease entitled *Tamak Shwas*. In *Tamak Shwas, dosha* imbalance is caused by simultaneous aggravation of *vata* and *kapha*. This simultaneous aggravation of *vata* and *kapha* may be due to some specific causative factors described in Ayurvedic text. Current estimates suggest that 300 million people worldwide suffer from asthma and an additional 100 million may be diagnosed with asthma by 2025.[3] Asthma is a disease characterized by chronic airway inflammation and increased airway hyper–responsiveness leading to symptoms of wheeze, cough, chest-tightness and dyspnoea whereas the main features of Bronchial Asthma are recurrent episodes of breathlessness, chest tightness, wheezing and cough. The prevalence of respiratory disorders like *Tamak Shwas* (Bronchial asthma) is at alarming stage these days mainly due to excessive pollution, unhealthy dietary habits, stress and familial disposition etc.

In Ayurvedic texts various formulations and treatment modalities have been described in the management of *Tamak Shwas* roga. *Shringyadi choorna* is a formulation stated in the textbook of *Chakradatta* which contains the most potent ingredients namely *Karkatshringi* (Pistacia chinensis subsp. integerrima), *Pushkarmool* (Inula racemosa), *Shati* (Hedychium spicatum Sm), *Musta* (Cyperus rotundus L), *Pippali* (Piper longum), *Marich* (Piper nigrum L)., *Shunthi (*Zingiber officinale Roscoe) and *Sharkara* (Saccharum Officinarum) in equal quantity which are mostly responsible for its anti asthmatic properties and adding to the potency the anupan dravya are *Guduchi, Vasa, Bilva, Agnimanth, Shyonak, Patla and Gambhari* which helps to boost immunity in patients.[4]

In Ayurvedic texts various acharyas have mentioned *Shringyadi choorna* which have different contents.

Table No. 1: List of the ingredients of various types of *Shringyadi choorna*.

S.I	Name of drug	S.S	Y.R, B.R, V.M, G.N,	G.N	Chakradatta
1.	karkatshringi	+	+	+	+
2.	Ativisha	+	-	-	-
3.	Pippali	+	-	-	+
4.	Shunthi	+	+	+	+
5,	Kali mirch	+	+	-	+
6.	Triphala	-	+	-	-
7.	Kantkari	-	+	-	-
8.	Bharangi	-	+	+	-

9.	pushkarmool	-	+	-	+
10.	nagarmotha	-	-	+	+
11.	Kachur	-	-	-	+
12.	Vacha	-	-	+	-
13.	Katphal	-	-	+	-
14.	gandhtrina	-	-	+	-
15.	Dhaniya	-	-	+	-
16.	Haritki	-	-	+	-
17.	Devdaru	-	-	+	-
18.	Hingu	-	-	+	-

SS-Sharangdhar Samhita, YR-Yoga ratnakar, BR- Bhaishjya ratnawali, VM- Vrindda madhav, GN-Gada nigraha,

Table No. 2: The Composition of *Shringyadi choorna* by *Acharya Chakrapani.*

SI	*Sanskrit name*	*Botanical name*	*Ras*	*Guna*	*Virya*	*Vipak*	*Karma*	Active ingredient
I	*karkatshringi*	Pistacia chinensis (subsp. integerrima)	*Kashaya, Tikta*	*Laghu, Ruksha*	*Ushna*	*Katu*	*Shwashar(BP) Kaphavatahara, Dipana*	Pinene, camphene, dllinonene, cineole, terpineol, aromadendrone[5]
II	*shunthi*	Zingiber officinale Roscoe	*Katu*	*Laghu, Snigdha*	*Ushna*	*Madhura*	*Shawasahar(BP), Vatakaphahara.*	Sesquiterpene hydrocarbons and alcohols [6]
III	*Pippali*	Piper longum	*Katu*	*Laghu, Snigdha, Tikshna*	*Anusnas heeta*	*Madhura*	*Shwaskasahar (BP)*	Piperine[7]
IV	*nagarmotha*	Cyperus rotundus L.	*Katu, Tikta, Kashaya*	*Laghu, Ruksha*	*Sheeta*	*Katu*	*Kaphahar*	Sesquiterpene hydrocarbons[8], sesquiterpene epoxides, sesquiterpene ketones, monoterpene
V	*pushkar mool*	Inula racemosa	*Katu, Tikta*	*Laghu, Tikshna*	*Ushna*	*Katu*	*Shwashar, shothahara, kasahara*[9]	Alantolactone, iridin, isoalantolactone, inunolide, dihydro isoalantolactone, beta-sitosterol[10]
VI	*shati*	Hedychium spicatum Sm.	*Katu, Tikta, Kashaya*	*Laghu, Tikshna*	*Ushna*	*Katu*	*Shwashar (BP) Kaphavatahara, Grahi*	Methyl paracumarin acetate[11], sesquiterpenes.
VII	*marich*	Piper nigrum L.	*Katu*	*Laghu, Tikshna*	*Ushna*	*Katu*	Shwashar Kaphahar(BP)	Piperine[12]
VIII	*sharkara*	Saccharum Officinarum	*Madhura*	*Guru, Sara, Snigdha*	*Sheeta*	*Madhura*	*Kaphahara, Pittahara, Vatahara*	

* B.P- *Bhav Prakash*

AIMS AND OBJECTIVES

- To review the pharmacological activity of ingredients of *Shringyadi choorna.*
- On the basis of this hypothesis, review the researches done on this drug *Shringyadi choorna.*

MATERIAL AND METHODS

A few works carried out on *Shringyadi Choorna* and some works carried out on its ingredients have been reviewed.

OBSERVATIONS

- A clinical study with *Shringyadi Choorna* 5 gm b.d and *guduchyadi kwath* 40 ml as anupana dravya 1 hour before meal for two months with assessment follow up of 15 days interval was carried out. Out of 20 patients, 16 patients i.e. 80% patients attained marked improvement in the symptoms. Results of this work have undoubtedly established the importance of synergistic effect of *Shringyadi Churna* & *Guduchyadi Kwatha*.[13]
- Another study was planned to evaluate the efficacy of *Shringyadi Churna* with and without *Pranayama* procedures with the help of modern parameters. The drug *Shringyadi Churna* along with *Pranayama* was found to be highly significant.[14]
- A pharmaceutical and analytical standardization of a syrup made from the contents of *Shringyadi Choorna* was done at Parul Institute of Ayurveda, Vadodara Gujarat. The results of qualitative and quantitative analysis by physico-chemical parameters were more effective.[15]

1. KARKATSHRINGI

- The mast cell stabilization, antihistaminic and spasmolytic activity of aqueous extract of galls was evaluated using albino Wistar rats and guinea pigs. All these findings revealed the antiasthmatic activity of aqueous extract of *P.integerrima* galls.[16]
- A study was conducted on the active constituents of karkatshringi reported the presence of glycosides, flavonoids, tannins and phenolic constituents in aqueous extract of *P.integerrima* galls exhibited higher anti bacterial activity.[17]
- In an another study it was reported that methanol extract (ME) and ethyl acetate fraction of methanol extract (EAFME) of P. *integerrima* was rich in phenolic and flavonoid content, it showed *in vitro* antioxidant activity of gall.[18]
- Recent investigations have demonstrated that essential oils and galls aqueous extract of *P. integerrima* possess an antiasthmatic activity due to the inhibition of histamine release, 5-lipoxygenase activity, and mast cell stabilization.[19]

2. SHATI

- An overview on analgesic and anti-inflammatory activity suggests that the benzene extract of rhizome of *H. spicatum* possessed significant analgesic activity in acetic acid induced writhing in mice whereas 50% ethanol and hexane extracts of rhizome was found to possess significant anti-inflammatory activity in carrageenan induced hind paw edema in mice.[20]
- Terpenoid compositions of rhizome of *H. spicatum* were found to possess antioxidant activity. The essential oils of rhizome of *H.spicatum* collected from three different regions exhibited difference in the relative content of essential oils which were studied for their antioxidant activity by DPPH radical scavenging activity, reducing power, and effect on the chelating properties of Fe2+. The essential oil from all the regions exhibited moderate to good Fe2+ chelating activity where as the essential oil exhibited a completely different DPPH radical scavenging profile.[21]
- The powdered rhizome of *H. spicatum*, given 10 g in divided doses to 25 patients with recurrent paroxysmal attacks of dysopnea (bronchial asthma) for 4 weeks, completely relieved dysopnea, cough and restlessness in all the patients. The ronchi completely disappeared in 36% of the patients. The mean respiration rate was reduced by 25% and the vital capacity was increased by 20%. The mean absolute eosinophil count also declined by 55.6%.

3. NAGARMOTHA

- The hydroalcoholic extract of *C. rotundus* (CRE) exhibited high reduction capability and powerful free radical scavenging, especially against DPPH and superoxide anions. CRE also showed inhibited lipid peroxidation in rat liver homogenate induced by Fe2+/ascorbate and prevented deoxyribose degradation in both non–site-specific and site-specific assays showing the hydroxyl radical scavenging and metal chelating activity of the hydroalcoholic extract. Cyperus rotundus root extract has a potent superoxide radical scavenging effects.[23]
- A study was conducted to see the anti inflammatory effect of the oil in carrageenan induced inflammation (paw edema) in rats. The results showed dose dependent activity, indicated by reduction in paw edema in anti-inflammatory and antiarthritic activity,[24] and significant reduction ($p<0.01$) in the MES induced convulsion in comparison to control. From literature survey as well as experiments performed, it can be said that

essential oil possess a good anti inflammatory activity due to the presence of beta-Sitosterol[25] and flavonoids.

- In a study ethanolic extract of Cyperus rotundus Linn. Rhizome was found to exhibit highest antimicrobial activity against the pathogenic microbes viz. Staphylococcus epidermidis, Bacillus cereus, Pseudomonas aeruginosa, Escherichia coli, Aspergillus niger and Candida albicans.[26]

4. PUSHKARMOOL

- Alcoholic extract of root, was studied for its antiallergic effect in experimental models of Type I hypersensitivity, viz; egg albumin induced passive cutaneous anaphylaxis (PCA) and mast cell degranulation in albino rats. Protection against compound 48/80 induced mast cell degranulation by alcoholic extract of *Inula racemosa* (single dose) was similar to that of disodium cromoglycate. The results suggest that *Inula racemosa* possessed potent antiallergic properties.[27]
- Another study was undertaken to evaluate the anti inflammatory and analgesic activities of aqueous extract obtained from root of inula racemosa. The anti-inflammatory activity was evaluated in carrageenan induced rat paw edema model. Saponins, terpenes, phenolics, flavonoids and glycosides were detected in aqueous extract. Anti-inflammatory and analgesic activities of aqueous extract were found to be highest at 60 and 63%, respectively, at the dose of 400 mg/kg and comparable to the respective standard drugs. The effective anti-inflammatory and analgesic activities of aqueous extract of *I. racemosa* positively correlate with respect to their dose.[28]

5. PIPPALI

- Antiasthmatic activity was reported in extract of the fruits in milk reduced passive cutaneous anaphylaxis in rats and protected guinea pigs against antigen-induced bronchospasm.[29]
- The fruit decoction of piper longum showed anti-inflammatory activity against carrageenin induced rat paw edema.[30]

6. SHUNTHI

- *Zingiber officinale* ameliorates allergic asthma via suppression of Th2-mediated immune response. This study investigates the immunosuppressive activity of ginger by using the mouse model of ovalbumin-induced allergic asthma. Significant reduction was observed in goblet cell hyperplasia, infiltration of inflammatory cells in airways, and edema with

vascular congestion by both ethanol and aqueous extracts, respectively. A highly significant reduction of total and differential count of eosinophils and neutrophils in blood were also observed. Both extracts significantly inhibited Th2-mediated immune response, which is evident by a decrease in mRNA expression levels of IL-4 and IL-5. The root of this drug is bitter, acrid, thermogenic, aromatic, stimulant, expectorant, bronchodilator.[31]

- The study by Ali G et al.,(2010) validated the medicinal potential of the leaves and young rhizome of *Zingiber officinale* and the positive relationship between total phenolics content and anti oxidant activities in *Zingiber officinale.*[32]
- Study on the effects of ginger and its constituents on airway smooth muscle relaxation and calcium regulation of both human and guinea pig trachea showed significant broncho relaxant activities. Active component gingerol protected against methacholine-induced hyper responsiveness in an in vivo murine model.[33]

7. MARICH

- Methanolic extract of bioactive compounds of P. nigrum was assayed for in vitro antibacterial activity against Escherichia coli, Pseudomonas aerogenosa, Proteus mirabilis, Staphylococcus aureus and Klebsiella pneumonia by using the diffusion method in agar. The zone of inhibition compared with different standard antibiotics. The diameters of inhibition zones ranged from 5.00 to 0.40 mm for all treatments.[34]

DISCUSSION

The drug *Shringyadi choorna* consists of *Karkatashringi, Shunthi, Pippali, Maricha, Kachura, Nagarmotha, Puskarmula, Sharkara* which excellently balance each other in *Rasa-Panchaka* and enhance the *Vatakaphahara, Deepana, Pachana and Vatanulomana* properties. *Shringyaadi choorna* encounters *Vata & Kapha dosha* by virtue of its *tikta Katu-Rasa* dominance, *Ushna-Virya* and *Snigdha* property. The *gunas* of the drug are *laghu, tikshna* which are antagonistic to the *gunas* of *kapha dosha*, thereby normalizing *kapha dosha*. The *virya*(potency) of this drug is *ushna* (hot), whereas that of *vata* is *sheeta guna* (cold in Character).

Thus, all the ingredients of *Shringyadi Choorna* have the quality to normalise or suppress the *prakupitta vata dosha* (vitiated *vata dosha*) by *ushna virya* (hot potency) and *Agni mandya* (diminished digestion power) is corrected by *trikatu*. *Pranavaha srotas* is mainly involved which is corrected by all these drugs as they are *Swasa hara* (reduce expiratory

dysponea) and *kasahara* (*decrease cough*). *Srotodusty* (The mechanism of manifestation of diseases) is *sanga* (occlusion), which is relieved by the *ushna* (*hot*)properties of the drug and *swasahara* property. *Katu-Rasa* performs *Pachana* of *Ama* in the body. Also *Kaphaghna* and *Kaphanissaraaka guna* will helps in the removing of blocked channels of the bodyline.

Once *Srotorodha* is cured, *Vatanulomana* will be achieved so that the *Kupita vata* will attain its *Samyaka* state and there will be relief in the symptoms of *Tamak Shwas*. *Adhistana* (site of disease) is *amasaya* (upper part of stomach), which is the seat of *kapha*, and the ingredients are *katu, tikta rasa pradhana*, acting over *kapha dosha* and thereby restoring the normal function of *amasaya* (upper part of Stomach).

By these properties, pathogenesis of disease is broken (*samprapti vighatana*). Also, *balya Guna* of the medicines and *anupaan dravya* on the other hand, prevents the *prakopa* of *vayu* which may occur due to continuous use of *Kapahnashak* & *Kaphanissaraka aushadh*. As per *Acharya Charak* any remedy which either aggravates *vata* and pacifies *kapha* or pacifies *vata* and aggravates *kapha* should be used. Additionaly which pacifies both *vata kapha* or preferably which pacifies only *vata* should be used for the management of *Tamak Shwas*.[35]

The pharmacological studies already reported on the individual drugs also favours the effectiveness of various contents of *Shringyadi choorn*a in disease Bronchial Asthma as given below in the table.

Table No. 3: The proven properties of the ingredients are summarised in the table below.

S.I	Name of drug	Part used	Proven properties
I	*Karkatshringi*	Galls	Anti allergic, Anti inflammatory, analgesic and antioxidant[36]
II	*Pushkarmool*	Root	Anti allergic and mast cell stabilizer[37], Anti inflammatory[38]
III	*Nagarmotha*	Root	Anti-inflammatory[39], spasmolytic[40], anti viral[41], anti bacterial[42]
IV	*Shati*	Root	Anti-asthmatic[43], anti-histaminic, analgesic, anti-inflammatory, anti-allergic.[44]
V	*Shunthi*	Rhizome	Anti allergic, anti inflammatory[45], Anti histaminic, mast cell stabilizer, anti-spasmodic[46], Anti oxidant[47]
VI	*Maricha*	Root	Anti allergic, anti inflammatory, Anti oxidant[48]
VII	*Pippali*	Fruit	Anti allergic[49], Anti histaminic, mast cell stabilizer, anti-spasmodic[46], immunomodulator, Immunomodulator, anti-inflammatory & antioxidant[49]

CONCLUSION

The current management strategy is to allow the patient to live a normal life as possible and to prevent severe attacks in *Tamak Shwas*. Out of the three humors *Vata* is considered as the most difficult to treat so primary aim of treatment is to do *vatashamak cikitsa. Karkatshringi, pushkarmool, shati* have *ushna virya* and *katu vipak* which counters *vata* and *kapha dosha* whereas *nagarmotha* has *sheet virya* and *katu vipak* which may balance *pitta dosha*. *Trikatu* by virtue of its properties corrects *aam dosha* which is chiefly responsible in this disease and *sharkara* is *tridoshhar*. So all these drugs effectively manage *Tamak Shwas*. Most of the ingredients have *tikta* and *kashaya ras* which combats *kapha dosha* and are *ushana virya*, combating *vata-kapha dosha*. The pharmacological properties like bronchodilatory, anti-inflammatory and antihistaminic may activate the action of *Swasahara* and *kasahara* as described in Ayurveda. Mast cell, eosinphils and T-lymphocytes play an important role in Bronchial asthma[50] therefore *Shringyadi choorn*a & its ingredients may be collectively effective on airflow obstruction and airway hyper-responsiveness by bronchodilatory, anti-inflammatory and antihistaminic properties.[51,52] These drugs can produce relaxation of bronchioles, but action is slow and takes a longer time to develop but also persists for a longer period.[53,54] Antiasthmatic activity of extract of galls of Karkatshringi may be due to the membrane stabilizing potential, suppression of antibody production and inhibition of antigen induced histamine release whereas Piper longum is a known immunomodulator drug.[55,56]

The therapeutic efficacy of this drug is probably due to interdependent cellular and mediator networks supporting and involved in the inflammatory process of asthma. The drug review indicates that these *Ayurvedic* drugs have a wide therapeutic, viz. potent anti-inflammatory, anti-bacterial or antiviral, anti-allergic, immunomodulator, anti-asthmatic, expectorant and bronchodilator activity and hence can be successfully used in management of Bronchial asthma. Infact, some of the above drugs are already routinely being used in Indian kitchen, viz. *Shunthi, Maricha, Pippali* etc. and hence those families which regularly consume these as preventive medicine increases the immunity of an individual, acts as immunomodulator and also reduces the allergic episodes. It is explained that diet & drugs having *kaphavataghna, ushna* & *vatanulomana* properties are useful in *Tamak Shwas*.[57]

Emphasis to the medicine and healthier dietetic regimen which controls the *Kapha* and *Vata* along with drug interventions must be given. And including regular *pranayam* and *yogabhyas* in lifestyle can increase the longetivity of the patient.

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