A critical review on ayurveda drugs useful in Tamaka Shwasa (Childhood Asthma)

Nitu Sinha, Nisha Kumari Ojha and Puneet Srivastava

Abstract
Ayurveda (the science of life) is the ultimate theory with infallible factors based on Tridosha and Panchabhautic principles. At present time, many chronic recurrent airway disorders are gradually seen in worldwide population. Ayurveda has defined a disease Tamaka Shwasa (disorder associated with respiratory tract) which is equivalent to ‘Bronchial asthma’ in allopathic medicine. Children asthma is not a different disease from bronchial asthma in adults, but children do face unique challenges. Among 200 million asthmatics worldwide, approximately 15 million are found in India. The Prevalence has increased by two fold in last two decades. While describing the management, Nidana parivarjana along with Shodhana and Shamana Chikitsa as mentioned in ayurveda, Those Aushadhi, Ahara, and Vihara are Kapik-vata Shamaka, asthina and vatumulomak should be used in Shwasa chikitsa. In the present perspective, the re-validation of ancient ayurveda drugs (herbs and herbo-minerals drugs) which can improve the functions of respiratory tract by Samprapti Vighatana of disease and according to pharmacotherapy due to presence of specific chemical used in bronchial asthma. Shamana chikitsa is more beneficial in childhood asthma in comparison to Shodhana chikitsa because children cannot bear the stress of Shodhanachikitsa due to Alpabala. Ayurveda drugs (herbs and herbo-minerals drugs) with allopathic medicine have excellent response in management of childhood asthma.

Keywords: Ayurveda, Tridosha, Tamakashwasa, Bronchial asthma, Herbs and herbo-minerals drugs

1. Introduction
The basic concepts of ayurveda (the science of life) aremainly depend upon tridosha and panchabhautic principles. Among the Astangas of Ayurveda, Kaumarbhritya particularly deals with the problems related with infants and children. Dosas, dusyas, malas and also the disorders which are in adults are completely the same in children with the only difference that their quantity is less [1]. The administration of drugs in children are smaller dose according to disease [2]. In the present scenario, recommendation of drug doses are decided according to age and weight of child.

Ayurveda has defined a disease Tamaka Shwasa (disorder associated with respiratory tract) which is one of the five types of disease Shwasa. The signs, symptoms and etiopathogenesis of ‘Bronchial asthma’ explained in allopathic medicine have many similarities with the disease entity TamakaShwasa. Bronchial asthma is a common chronic inflammatory disease of airways characterized by variable and recurring symptoms, reversible airflow- obstruction and bronchospasm. Children asthma is not a different disease from asthma in adults, but children do face unique challenges. Asthma in children is a leading cause of emergency, with departmental visits, occasional hospitalizations and missed school days. If not treated properly some of persistent asthmatics end up in irreversible state due to airway remodeling. The prevalence of asthma is increasing in most countries. The peak incidence is seen in the age group of 5-10 years. When compared with girls, boys suffer twice as much as them. Even the severity of illness is also further severe in them [3]. It is about 2% in school-going age group [4]. The prevalence is 25.6% in 2009 which is under 18 years and near about 75% of asthma occurs in children under 5 years of age. Recent estimates recommend that asthma affects 300 million people world-wide and there will be an additional 100 million people will be diagnosed by 2025 [5]. It is a major health concern globally and causes a countless burden on the family and society and accounts for a large number of lost school days and affect with academic achievement and social communication, in addition places a strain on health visits to physician and hospital [6].

Tamaka Shwasa is Kapia-vataja vikar and site of its origin is pitta sthana [7]. Its affected the Pranavastra Srotas and massively injurious to life because of prolonged expiration, wheeze, dyspnoea of very deep velocity [8-9]. Vata when get obstructed by Ama (srotavardhaka) not able to move in downward direction and thus its normal physiological function (i.e.expulsion of
malamutra) is obstructed and patients suffers from the complaint of constipation, a cardinal sign of SamaVata. Although Acharya not clearly mentioned that it is Apana Vayu which get vitiated to produce Shwasa roga but by using this term, (Pratiloma) i.e. Apana Vayu which in normal physiological condition goes downward and helps in expelling out Malamutra get vitiated and starts moving in upward. The obstructed Vata moves upwards (Pratiloma Gait) and causes vitiation of Pranavaha Srotas Shitha Vata i.e. Pranavayu and Udanavayu to cause Shwasa Roja. Tamaka Shwasa classified on the basis of doshas as Vata Pradhan and Kapha Pradhan and have two allied stage of tamakashwasa known as Pratamaka and santamaka. Patients suffering from tamakashwasa when gets afflicted with fever and fainting, the condition is called as Pratamaka Shwasa. It is suggestive of involvement of Pittadosha in Pratamaka Shwasa. When the Patients feels submerged in darkness, the condition is called as Santamaka Shwasa. Etiological factors of Tamaka shwasa are included the use of cold waters, belong to a cold place, exposure to dust, smoke and air, intake of Vidahi (Irritant food), Guru (heavy) and Vishtambi (Slow digestible diet), Rakshamna (dry diet), Abhissyandi (the substances that causes obstruction to channels), exercise, long walk beyond the capacity, vitiation of Ama (intermediate products formed during digestion and metabolism), Vishamasana (ingestion of food in inadequate quantity), Aptarpmana, Kshaya (emaciation) and nutritional deficiency, injury to vital organs (Marma), as a consequence of jvara (fever), atisara (diarrhea), vomiting, anemia and poison, coryza, rakta-pitta (bleeding from different parts of body), anaha (constipation associated with flatulence), intake kapha annoying ingredients, injury to throat and chest, different types of obstructions to the channels to circulation. Sushruta and Vagbhata have only revealed the name as Pratamaka, which includes clinical manifestation of Santamaka.[12-13]

2. Aims
To emphasize the basic idea that is shared to many of the existing recommendations. Critically reviewing ayurveda drugs (herbs and herbo-minerals drugs) useful in management of tamakashwasa (childhood asthma).

3. Material and Methods
Various Ayurveda literature, Ayurveda pediatric books, Pharmacology (Dravyaguna) and Rasashastra books, magazines and research journals as well as PUBMED, MEDLINE database related to effect of ayurveda drugs (herbs and herbo-minerals drugs)useful in management of tamakashwasa (childhood asthma)are critically reviewed and analyzed.

4. Samanya chikitsa siddhanta
While describing the management, Acharya Charaka has clearly mentioned the importance of Nidana parivirjana along with Shamana and Shodhanachikitsa as mentioned below.

4.1 Nidana Parivarajan
Nidana parivarjan or prevention of all types of precipitating or predisposing factors is to be strictly followed in children. If the precipitating or predisposing factors are not avoided, the Dosas involved in the pathogenesis will further be aggravated, more prone to disease and the prognosis will be worse. Ayurveda fundamentally being emphatic about “Swasthya Rakshhanam” give priority to prophylactic management by which children are protected from the disease tamaka Shwasa. The “Agauntaka hetu” have to be avoided in the first place. Being a “Yapya Yoga”, avoidance of triggering factors and providing quality of life with minimum medication is the aim of childhood asthma management.

4.2 Shamana therapy
Those aushadh, ahara, and vihara are kaph-vata shamaka, ushna and vataunamak should be usedin shwasa chikitsa[14]. According to the sampapti of tamakashwasa, drugs should be kaphavatashamaka, ushna, and Vatamulomaka properties. For Shamana treatment of tamakashwasa, drugs have following properties[15].

| Table 1: Showing properties of drugs for shaman treatment of tamakashwasa (Childhood asthma) |
|---|---|---|---|
| Rasa | Katu, Tikta |
| Guna | Tiksha, Laghu, Raksha |
| Veerya | Ushna |
| Vishtaka | Katu |
| Karma | Deepana, Pachana, Vatunolamaka, Kaphavatashamaka |

4.3 Pharmacotherapy for bronchial asthma[16]
Pharmacotherapy for bronchial asthmainvolves use of medications that relax smooth muscle and dilate the airways and that decrease inflammation and thereby prevent exacerbations. The medications used for long term treatment of asthma include bronchodilators (adrenaline, terbutaline and salbutamol), steroids (beclomethasone, budesonide and fluticasone), mast cell stabilizers (Cromolyn sodium, Nedocromil, Ketotifen), leukotriene modifiers (Montelukast, Zafirlukast) theophylline and immunotherapy.

There are described many herbal and herbo-mineral drugs which are beneficial in tamakashwasa (childhood asthma) by its ayurvedic properties like rasa, guna, veerya, vishtaka, and its modern mode of action due to presence of some certain chemicals. These chemicals of herbal and herbo-mineral drugs act as a bronchodilator, mast cell stabilizer, expectorant, anti-inflammatory, anti-spasmodic, antiasthmatic, antihistaminic, immuno-modulatory and helpful in reducing the patients of tamakashwasa (bronchial asthma). Ayurveda medicines are the preventive and protective therapy which has minimal side effects, used in long term therapy. But emergency treatment needs allopathic medicine, which gives quick relief. So existence of asthmatic children can be managed by using the herbal and herbo-mineral drugs with allopathic medicine. The requirement of the time is to develop an allopathic system using the herbal and herbo-mineral drugs approaches to reduce the side effects for treating childhood asthma.

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Name of Drugs</th>
<th>Latin Name</th>
<th>Property of drugs</th>
<th>Modern mode of action</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>Plant Name</td>
<td>Scientific Name</td>
<td>Rasa</td>
<td>Guna</td>
</tr>
<tr>
<td>-----</td>
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<td>-----------------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>3</td>
<td>Ruksha</td>
<td>Elettaria cardamomum</td>
<td>Ru</td>
<td>La</td>
</tr>
<tr>
<td>4</td>
<td>Vasa</td>
<td>Adhatoda vassica Nees.</td>
<td>Tki, Kash</td>
<td>Ruk</td>
</tr>
<tr>
<td>5</td>
<td>Madhuyasthi</td>
<td>Glycyrrhiza glabra Linn.</td>
<td>Madhura</td>
<td>Guru</td>
</tr>
<tr>
<td>6</td>
<td>Shirish</td>
<td>Alhizia lebbeck Benth.</td>
<td>Madhura, Tki, Kash</td>
<td>Tik</td>
</tr>
<tr>
<td>7</td>
<td>Suksmaila</td>
<td>Elettaria cardamomum</td>
<td>Ru</td>
<td>La</td>
</tr>
<tr>
<td>8</td>
<td>Pippali</td>
<td>Piper longum Linn.</td>
<td>Tki, Kash</td>
<td>Guru</td>
</tr>
<tr>
<td>9</td>
<td>Bharangi</td>
<td>Clerodendrum serratum</td>
<td>Ru, Ktk, Ruk</td>
<td>La</td>
</tr>
<tr>
<td>10</td>
<td>Gaduchi</td>
<td>Tinospora cordifolia</td>
<td>Tki, Kash</td>
<td>Guru</td>
</tr>
<tr>
<td>11</td>
<td>Soma</td>
<td>Ephedra vulgaris</td>
<td>Ktk, Ruk</td>
<td>La</td>
</tr>
<tr>
<td>12</td>
<td>Rasna</td>
<td>Pluchealanceolata</td>
<td>Tki, Guru</td>
<td>Sh</td>
</tr>
<tr>
<td>13</td>
<td>Tulsi</td>
<td>Ocimum sanctum</td>
<td>Ktk, Tki</td>
<td>Ktk, Ruk</td>
</tr>
<tr>
<td>14</td>
<td>Maricha</td>
<td>Piper nigrum</td>
<td>Ktk, Tki</td>
<td>Tki, Ruk</td>
</tr>
<tr>
<td>15</td>
<td>Kantakari</td>
<td>Solanum surattense Burm. F</td>
<td>Ruk, Tki, Kash</td>
<td>Sh, Vsh</td>
</tr>
<tr>
<td>16</td>
<td>Haridra</td>
<td>Curcuma longa</td>
<td>Ktk, Tki</td>
<td>Ruk, Ktk</td>
</tr>
<tr>
<td>17</td>
<td>Karkatshringi</td>
<td>Pistacia integerrima</td>
<td>Ktk, Kash</td>
<td>Ruk, Ktk</td>
</tr>
<tr>
<td>18</td>
<td>Shati</td>
<td>Hedychium Spicatum</td>
<td>Ktk, Tki, Kash</td>
<td>La</td>
</tr>
</tbody>
</table>
4.4 Shodhana Therapy
Panchakarma therapies are used in shodhana therapy. The child who suffers from Swasa Roga should be first applied Saindhava Lavana with Tila Taila over the chest region then subjected to sudation either by methods of steam (Nadi Sweda), hot bed sudation (Prastara) or mixed sudation [67], Acharya Sushruta [68] has recommended to do both Vaman, Virechana in Shswasa management while Acharya Charaka has described first Vaman in Shwas may be as an emergency and after that Virechana with Vata-shleshmahara dravya particularly for Tamaka Shwasa in between the two attacks or Aegavastha. Virechana is best for Srotoshodhan. Generally children cannot bear the stress of panchakarma procedure used in shodhana therapy, so shaman chikitsa is much better than shodhanachikitsa in childhood asthma.

4.5 Pathya: (Whoelse diet and rolyte)

a. Ahara [71, 72]:
- Shimbi Dhanya: Nishpava (Lablabpurpureus/Indian bean), Mashra (Vignamungo), Tila (Sesamum indicum), Sarshapa (Brassica nigra)
- Shaaka Varga: Kanda (Tabers)
- Dadhi Varga: Dadhi
- Kshira Varga: Mahisha Kshira
- Godhuma (wheat: Triticumsativum), Mudge (green gram),
- Shwasa-krasna, Samirapannaga Rasa
- Vipaka : Katu
- Virya : Sheeta
- Guna : Laghu
- Vipaka : Madhura
- Vipaka : Madhura
- Vipaka : Katu
- Vipaka : Katu
- Vipaka : Vipaka
- Vipaka : Katu
- Vipaka : Madhura
- Vipaka : Katu
- Vipaka : Ushna

b. Vihara: Vegadhara, In front of dust/wind/hot sun, hard exercise, Smoke, Pets, Pollen Sheeta, Raksha [A-

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<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Drugs</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Swasa-kasa-chintamani Rasa</td>
<td>More effective in those patients who are not taking corticosteroid with bronchodilator while children taking corticosteroids with/belowBronchial Asthma. It is beneficial in childhood bronchial asthma (in those children who have history of taking steroid and bronchodilators) [48]</td>
</tr>
<tr>
<td>2.</td>
<td>Mahalaxmilas Rasa</td>
<td>To control asthmaic attacks [49]</td>
</tr>
<tr>
<td>3.</td>
<td>Shwasa-kuthara Rasa</td>
<td>Anti-Allergic functions [50]</td>
</tr>
<tr>
<td>4.</td>
<td>Samirapamanga Rasa</td>
<td>To preclude recurrence of asthma, enhancement in peak expiratory flow rate [51]</td>
</tr>
<tr>
<td>5.</td>
<td>Patnapatradhi yoga</td>
<td>Act as bronchodilator drug, anti-histaminic and anti-inflammatory activity [52]</td>
</tr>
<tr>
<td>6.</td>
<td>Krishnadi curma</td>
<td>Use as bronchodilator [53]</td>
</tr>
<tr>
<td>7.</td>
<td>Shringnadi curma</td>
<td>Use as anti-inflammatory, anti-microbial, anti-oxidant, bronchodilator [54]</td>
</tr>
<tr>
<td>8.</td>
<td>Puskaranmuladi curma</td>
<td>Use in Tamaka Shwasa (Bronchial Asthma) With Pulmonary Function Tests [55]</td>
</tr>
<tr>
<td>9.</td>
<td>Sitopadali curma</td>
<td>Manage cold &amp; chest congestion, use as expectorant, anti-oxidant and anti-inflammatory properties [56]</td>
</tr>
<tr>
<td>10.</td>
<td>Shunthyadi curma</td>
<td>Anti-inflammatory, anti-microbial, immunomodulatory, anti-asthmatic due to individual drugs favour its effect [57]</td>
</tr>
<tr>
<td>11.</td>
<td>Abrakha Bhasma</td>
<td>Use in Asthma and low immunity [58]</td>
</tr>
<tr>
<td>12.</td>
<td>Godanti Bhasma</td>
<td>Cure cough and dyspnea [59]</td>
</tr>
<tr>
<td>13.</td>
<td>Lavangadi Vati</td>
<td>Bronchodilator [60]</td>
</tr>
<tr>
<td>14.</td>
<td>Kanakasava</td>
<td>To show immuno-stimulating activity on the splenic cells of BALB/c mice in vitro [61]</td>
</tr>
<tr>
<td>15.</td>
<td>Vasa Avaleha</td>
<td>Use in tamakashwasa (Bronchial asthma) [62]</td>
</tr>
<tr>
<td>16.</td>
<td>Bhrungyadi Avaleha</td>
<td>Use in childhood bronchial Asthma [63]</td>
</tr>
<tr>
<td>17.</td>
<td>Vasa Haritaki Avaleha</td>
<td>Use in tamakashwasa (Bronchial asthma) [64]</td>
</tr>
<tr>
<td>18.</td>
<td>Vyaghri harihaki</td>
<td>Use in bronchial asthma [65]</td>
</tr>
<tr>
<td>19.</td>
<td>Vrisha grihri</td>
<td>To prevent recurrent respiratory tract infections by augmenting child’s immunity [66]</td>
</tr>
</tbody>
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Conditioner], cold and damp places. Fasting for a longer period, Seating in frosty, smoky and congested places for a longer period etc. are to be evaded.

5. Discussion

Tamakashwasa is a well-defined disease in Ayurveda which is equivalent with allopathic medicine disease bronchial asthma on the considerations of risk factors, etio-pathology, clinical manifestations and management principles. All the drugs have the quality to standardize or overwhelm the symptoms of the disease. They support in decreasing inflammation of the bronchioles and are also beneficial in recurrent rhinitis, chronic cough and reducing the cough and relieving chest pain. The effects of these herbs and herbo-minerals drugs are to liquefy the thick bronchial secretion and relief in cough expectation. They are Vatta, Pitta and Kapha pacifying properties and are used in Kasa and Tamaka-Shwasa. The entirety total properties of herbal and herbo-minerlas are TiktaKatu Rasa, light and penetrating properties, Ushnavirya (hot potency) and decrease Vata and Kapha Dosha. The Gunas of the drug are Laghu, RukshaTikshna,which are antagonistic to the Gunas of KaphaDosha, thus normalizing Kapha Dosha. Katurasa haveDeepana, Pachana, Ruchikara, Shodhana, Sritansi Vivrunoti (Prasrayati Srotanis-Aruandata), Kaphaghnna properties [73]. One belongings of katu rasa pronounced by Acharya charaka is ‘Marganivrunoti’ [74] which means it clears the srotas and stops pathogenesis by precluding Dosh-dushhya samurchana. Tiktaras haveDeepana, Aruchihara, Krimihara, Trishnahaara, Vishaghna, Kaphapitaghna, Shoshhana, Kantha Vishidhana, Laghu properties. The Lekhana property and Ruksha Guna of Tikta Rasa lead to reduction of Kapha, and Kleda [75], thus relieving the Atipravritti and mucous hyper secretion. The Shhirikarana [76] property leads to having a proper Samhanana (Compactness) in lung alveoli. The Virya (potency) of this drug is Ushna (hot), while that of Vata is Sheeta Guna (cold in Character).Ushna veerya is Ashupak, pacifies Kapha and vata Dosha and promotes Sweda&Daha [77] thus helps in digestion of Ama, acts as exothermic, & increases basal metabolic rate. Elevated metabolic rate helps in fast destruction of cell debris and clearing the micro channels. As the micro channels are cleared, the vata becomes Anuloma. The drugs have potential properties of alleviating kapha by katu rasa and ushna veerya and laghu tikshna and Ruksha quality, and vata dosha by virtue of ushna veerya, Snigdha Guna of Sita. Thus Kapha Shamaka properties of drug help in breaking the Srotorodha and digestion of Ama, which leads to proper functioning of the body. Laghu guna is known for its action of Laghavakara (lightness), Kaphaghnna (alleviating Kapha Dosha), and Shighrapakivita (quickly digestible). It also causes Lekhana (removes corpulence) and Ropana (it heal the scars) [78]. Ruksha guna causes Stambhana (obstruction) and Kharatva (roughness) [79] thus bringing about a decrease in the extremely produced Rasa Mala Kapha. It causes absorption of excess kapha Dosha. It is known to dominate of vayu and agni mahabhuta [80] which results in alleviation of the vitiated kapha which is the main Dosha accountable for the pathogenesis. Ruksha Guna helps in absorption of excessive secretion and thereby helps in removing obstruction caused by thick mucus plug. Tikshna guna due to predominance of agni mahabhuta acts on the channels immediately and remove the obstruction by pacifying the kapha. It has Kaphavatara and Lekhana property. The Tikshna guna of drug helps in penetrating through the sanga created by the kapha, and carrying out its function. All these drugs clear the vitiated Pranavahasrotasand diminish expiratory dyspnea. Srotodusti (The mechanism of manifestation of diseases), which is Sanga (occlusion) type, is relieved by the Ushna (hot) properties of the drug and Shwasa properties. They reduce inflammation of the bronchioles. These drugs also worthwhile in recurrent rhinitis, chronic cough then reducing the cough and relieving chest pain. The benefits of these herbs and herbo-minerals drugs are highly acclaimed in Ayurveda classical literature and Rasashatra books for management of tamakashwasa which make the secretion thin and helps in expectoration, decrease the inflammation of the respiratory system, signs and symptoms of Tamaka-Shwasa. All herbs and herbo-minerals drugs have anti allergic, bronchodilator effect, and anti-inflammatory and immune-modulator properties. These properties of drugs reduce inflammation in bronchial lumen, increase strength of respiratory system. These drugs pacifies Dushita Vata, Pitta and Kapha Dosha and control asthmatic problems and improves immunity. So these Ayurveda drugs are used in tamaka shwasa and cure the disease. In emergency conditions, herbs and herbo-minerals drugs are used with allopathic medicine which give excellent response in management of childhood asthma because these drugs have no relevant side effect.

6. Conclusions

The present article reviews the re-validation of ancient Ayurvedaerads (herbs and herbo-minerals drugs) which can improve the functions of respiratory tract by Samprapti Vighatana of Tamaka Shwasaand pharmacotherapy used in childhood asthma.According to the weight, age and severity of the disease, drug doses are decided for children. The properties of herbs and herbo-minerals drugswhich is used in Tamaka Shwasa according to Ayurveda are deepana, pachana, Kapha-vatashamaka, Vatanulomaka, Srotosodhaka, Kantha Vishidhaka. The ultimate treatment methodssare mentioned in Ayurveda classics i.e. Nikand parivarjan, Samsamana and Samshodhana, if administered thoughtfully, the desired results can be achieved. Shama chikitsa is more beneficial in childhood asthma in comparison to shodhanachikitsa because children cannot bear the stress of shodhanachikitsa due to alpabala. Ayurvedaerads (herbs and herbo-minerals drugs) with allopathic medicine have excellent response in the management of childhood asthma.

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77. Tripathi Brahmand, Ashtangahridayam of Vagbhatt; (Nirmala Hindi Commentary), Sutrasthana 9/18-19, Chaukhambha Sanskrit Pratisthan, Delhi (India) 2009, 107.

