



## ANTIASTHMATIC HERBAL DRUGS - A REVIEW

MOHAMMAD YAHEYA MOHAMMAD ISMAIL\*

Lecturer in Pharmacy, Dept. of Pharmacy, Higher College of Technology, Muscat, Sultanate of Oman.

Email: mohammadyaheya@yahoo.com

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### ABSTRACT

Plants are always an exemplary source of drugs; in fact many of the currently available drugs were derived either directly or indirectly from them. In the past decade, research has been focused on scientific evaluation of traditional drugs of plant origin for the treatment of various diseases. Since the time immemorial, various herbs are used as antiasthmatic with efficient therapeutic response. Examples of various herbs used in asthma are *Adhatoda vasica*, *Albizia lebbek*, *Artemisia caerulescens*, *Boswellia serrata*, *Calotropis gigantea*, *Calotropis procera*, *Cedrus deodara*, *Clerodendron serratum*, *Curcuma longa*, *Eugenia caryophyllis*, *Eleocharis sphenocarpa*, *Inula racemosa*, *Ocimum sanctum*, *Picrorrhiza kurroa*, *Piper longum*, *Sarcostemma brevistigma*, *Solanum xanthocarpum*, *Tephrosia purpurea*, *Tinospora cordifolia*, *Tylophora asthmatica*, *Vitex negundo* etc. An attempt has been made to review antiasthmatic medicinal plants in the present article.

**Keywords:** Traditional systems, asthma, Ayurveda, medicinal plants.

### INTRODUCTION

From the time immemorial, man has been depended on plants as medicine. From a historical perspective, it has been evident that the fascination with plants is as old as mankind. Herbs have provided us some of the very important life saving drugs used in the armamentarium of modern medicine. The plant kingdom represents a rich source of organic components, many of which have been used for medicinal & other purposes. Herbal medicines remain the major source of health care for the world's population. WHO has recognized herbal medicine as an essential building block for primary health care of vast countries like India. In spite of advances in modern system of medicine, there are various areas like tropical diseases, herpes, AIDS, cancer, bronchial asthma etc., which still remain a challenge to present day drug therapy.<sup>1-3</sup>

Asthma is a chronic disease characterized by acute exacerbation of coughing, dyspnoea, wheezing and chest tightness. Patients usually have reduced forced expiratory volume in one second as well as reduced airflow. Other features of asthma are airway inflammation and bronchial hyper-responsiveness, which are not unique to the other diseases. Its increased prevalence, morbidity and mortality rates have recognized the growing seriousness of asthma in the general population in the past 20 years. From 1980 to 1987 the prevalence rate of asthma in the United States increased by 29 %. Asthma is also increasing in severity and is a leading cause of mortality throughout the world.<sup>1,4,5</sup>

The traditional medicinal systems and the availability of a large variety of medicinal plants in universe have greatly facilitated the researchers to develop keen interest in their screening, research and development. An attempt has been made to focus the antiasthmatic medicinal plants in this review.

### management of asthma in traditional medicinal system – Ayurveda<sup>4,5</sup>

Ayurveda is an example of a long-standing tradition that offers a unique insight onto comprehensive approach to asthma management through proper care of the respiratory tract. This includes maintaining the nourishing functions of the lungs in providing oxygen to the body. Ayurvedic formulations used in the management of asthma therefore judiciously combine herbs for breathing support with anti-oxidant herbs to support digestive, cardiac and nerve functions, expectorant herbs as well as soothing herbs. The following components are normally included in the Ayurvedic approach to the management of asthma.

### Essential components

- Long-term administration of pulmonary tonics to strengthen the lungs.
- Administration of relaxing expectorants to prevent building up of sputum.
- Antispasmodic preparations to help/mitigate the effect of the bronchospasm on the pulmonary muscles.

### Ancillary components

- Demulcents could be used to sooth irritation of mucous surfaces.
- Anti-spasmodic would prevent the over production of sputum in lungs or sinuses.
- Anti-microbial compounds would prevent secondary infections.
- Nervine support herbs are needed to enable adaptation to stress, since excessive stress or nervous debility may aggravate the symptoms of asthma.

### Herbal drugs used in asthma

Asthma is a global problem. Many synthetic drugs are used to treat acute symptoms of asthma, but they are not completely safe for long term use. Hence search has been started once again to look back to traditional medicine which can be used to treat asthma.

The following table 1 gives a brief review of the medicinal plants used as antiasthmatic with their probable mechanism of action.

### CONCLUSION

Plants are always an exemplary source of drugs; in fact many of the currently available drugs were derived either directly or indirectly from them. In the past decade, research has been focused on scientific evaluation of traditional drugs of plant origin for the treatment of various diseases. In developing countries 80% of population is using traditional medicine in primary medical problems. In addition to prescription and non-prescription drugs, there are an increasing number of herbs that can be used to treat many of the precursor or chronic conditions of asthma. Precautions should be taken when combining herbs with prescription or non-prescriptions drugs, as there is always the possibility of a drug reaction or adverse condition occurring. Herbs for asthma should not be used in the case of a moderate or severe asthma attack but they are often very effective in controlling the chronic symptoms of asthma. Herbs for asthma can be used in conjunction with

prescribed medications but they should not replace prescription

medications unless the patient is under the care of a physician.

**Table 1: Antiasthmatic plants and their mechanism of action**

Plant	Part used	Extract/Active principle	Probable mechanism of action
<i>A. aspera</i>	Roots	Oily preparation	Decreased ESR, Decreased total Eosinophil count. <sup>6</sup>
<i>A. vasica</i>	Leaves	Alkaloids	Bronchodilator, Anti- anaphylactic <sup>6</sup>
<i>A. lebbec</i>	Roots		
<i>A. serrata</i>	Stem bark	Aqueous. Extract	Mast cell stabilizing activity <sup>7</sup>
	Root	Boswellin, boswellic acids	Inhibit LT biosynthesis and block synthesis of 5-HETE & LTB <sub>4</sub> <sup>8</sup>
<i>C. gigantia</i> ,	Flower	α&β calotropol, β-amyryn,	Bronchodilator, anti-inflammatory <sup>9</sup>
<i>C. procera</i>		calotropin, giganteol	
<i>C. deodara</i>	Wood	Himacholol	Mast cell stabilizing activity <sup>10</sup>
<i>C. minima</i>	Whole plant	Pseudoguanolid, sesquiterpene, lactones, flavonoids	Inhibits passive cutaneous anaphylaxis in rats <sup>11</sup>
<i>C. serratum</i>	Leaves	Aqueous extract.	Bronchodilator <sup>12</sup>
<i>C. longa</i>	Rhizome	Tumerones, curcuminoids	Inhibits histamine release from rat peritoneal mast cells <sup>13</sup>
<i>I. racemosa</i>	Roots	Aqueous, alcoholic extract	Anti-histaminic, Anti-serotonergic <sup>14</sup>
<i>P. kurroa</i>	Roots	Picrorrhizin	Inhibits release of histamine and SRS-A <sup>15</sup>
<i>S. xanthocarpum</i>	Herb	Salasodin	Bronchodilator <sup>16</sup>
<i>S. brevistigma</i>	Twigs	Alkaloid fraction	Inhibits passive cutaneous anaphylaxis in rates <sup>17</sup>
<i>T. purpurea</i>	Whole plant	Ethanollic extract	Bronchodilatory, antianaphylactic <sup>18</sup>
<i>T. cardoifolia</i>	Stem	Aqueous extract.	Mast cell stabilizing activity <sup>19</sup>
<i>T. indica</i>	Whole plant	Indolizidine alkaloid.	Bronchodilatory, membrane stabilizing <sup>20</sup>
<i>V. negundo</i>	Leaves	Alcoholic extract	Bronchodilatory, membrane stabilizing <sup>21</sup>

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