

HERBAL (AYURVEDIC) WAY OF TREATMENT AND MANAGEMENT OF ALLERGIC RHINITIS

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Abstract—Allergic rhinitis is most commonly occurring but neglected respiratory disorder. Data about prevalence in India is still not available officially. However, it is claimed to be around 20-30%. Different alternative systems of medicine have suggested remedies for allergic rhinitis. However, still effectiveness in relief from disease is not there. Current review focuses on herbal remedies from Ayurvedic or herbal systems of medicine. In Sanskrit language it was classified as pratishyaya. Review of diagnosis of disease using principles mentioned in traditional texts of Ayurveda was done. Also different herbs which were found to be useful in treatment of allergic rhinitis were reviewed for their clinical evidence. Marketed formulations that are available in world for this disease were also reviewed. From the review it can be concluded that more clinical trials to support the utility of herbal drugs are necessary.

Index Terms— Allergic Rhinitis, Ayurveda, Herbal, Treatment, Management

I. INTRODUCTION

The disorder with very common symptoms such as sneezing, itching, nasal congestion and rhinorrhea often remains undiagnosed in many individuals in the world. [1] This is called as allergic rhinitis (AR). World Allergy Organization (WAO) defines this disorder as a nasal disorder wherein an immune system produces response to allergen which is IgE mediated. [2] WAO in depth review on allergic rhinitis suggests that around 400 million people suffer in the world from allergic rhinitis and most of the cases are undiagnosed and undertreated. [3] According to World Health Organization (WHO), this affects 10-30% of world population.[4] Prevalence of allergic rhinitis is around 7.8% in United States of America (USA), 5.9 % in France and 29% in United Kingdom (UK). However, in India no such study of prevalence was conducted in particular to study allergic rhinitis. Unofficially, it was suggested by researchers that approximately, 20-30% of Indians suffer from at least one allergic disease. [5] Only data from study conducted in year 1964 suggests that prevalence of allergic rhinitis was 10% in India [6]. Allergic rhinitis and its impact on asthma (ARIA) initiative in its Asia Pacific workshop report highlights the fact that this disorder has not received attention of both physicians and patients.[7]

Attempts are being made to treat allergic rhinitis in different systems of medicine. Acupuncture [8], herbal medicines (including Chinese herbal medicines [9], phytotherapy [10,11] (such as Aromatherapy, Bach's Flowers), Homeopathy [12], and physical methods such as Chiropractic methods [13], Buteyko breathing [14], Yoga (including Sahaj Yoga, Pranamya Yoga, Hath Yoga) [15], Intranasal Red Light [16], and UV-Visible light [17] were tried.

Although ancient science of Indian origin Ayurveda, has not been explored widely for treatment of allergic rhinitis. Present review covers different herbs that were explored by scientists as potential treatment to Allergic rhinitis. Attempt has been made by author to discuss treatment pattern of Ayurvedic medicines for allergic rhinitis. Along with it some formulations based on Ayurvedic principles are also available in Indian market. Review of their clinical data is also carried out.

II. DIAGNOSIS IN AYURVEDIC SYSTEM OF MEDICINE

It's a type of pratishyaya wherein kapha dosh is predominant. According to Ashtangahrdaya, a Sanskrit Language text, referred as textbook in Ayurveda, pratishyaya is defined (in Sanskrit language) as "Pratishyayat jayate kasaha (cough) and Kasat sanjayate kshyayaha". This means that due to pratishyaya, kapha dosh becomes predominant and cough disorders start occurring. This further leads to kshyaya (loss) of Anulom type that means weakening of all dhatus from rasa to shukra. [18]

Allergic Rhinitis from an Ayurvedic perspective is caused due to the ama (toxins) (exact terminology is kleda i.e. morbid matter) present in the body and due to low immunity (vyadhi kshamatva i.e. lack of proper formation of all dhatus in the body. Dhatu is bodily humors or tissues). [18]

According to Ashtanghrdaya, avashyay (dew), constant exposure to wind, ati bhashya (Excessive speaking), ati swapna (Excessive sleep), ati jagara (excessive awake), going to higher altitudes, change in drinking water (anya vari paan), excessive water drinking, a avoidance of vomiting sensation and tears are causative factors for allergic rhinitis.

Above causative factors, predominantly kapha, vata dosha and rakta dhatu are vitiated. Due to this, they start showing symptoms in respective areas such as head, neck and chest. Symptoms include heaviness of body (ang gaurva), heaviness of head (shiro gaurava), sneezing (shavathoho pravartanam), body ache (ang mard), goose bumps (parishta romata). [18]

According to Sushrutasanhita, Allergic Rhinitis is caused due to two factors:

- **Bodily factors** (nija factors) including Mandagni – low digestion strength, Kapha vrudhhi – increase of Kapha dosha, Virudh aahara – wrong food combinations
- **Environmental factors** (aagantuja factors) such as excessive sexual indulgence, continuous exposure to sunlight, smoke, raja (dust or any small particles in the air), drastic change in body temperature (cold to hot environment or vice versa), avoidance of urges or upholding of them, especially defecation, and micturition

Accumulated ama aggravates the levels of Kapha (Water) in the body, giving rise to different symptoms of allergies. [19] The herbs for allergic rhinitis help decrease the inflammation symptoms in an herbal natural way. The ayurvedic herbs for rhinitis aid in the betterment of

the respiratory system and prevent infections [20]. Ayurveda believes in balancing the three doshas present in the human body, thus treating the disease on the whole. Treatment involves clearing the sinuses and expelling phlegm, alleviating the relevant dosha and detoxification. [20]. Treatment should be focused from restoration of Agni (which is not just digestive capacity but factor responsible for proper formation of all dhatus). [21]

III. TREATMENT

According to Sushrut Sanhita, medicated smokes (Dhooma) which contain pungent (katu) and bitter (tikta) containing herbs such as mustard, rasanjan (made up of daru haldi), nagarmotha, pathaa, tejovati (tamalpatra), katfal can be used for treatment. Some tailas (oils) that contain Kutki, vacha (Vekhand), mustard, saindhav, chitrak, pippali, pilli mul, copper sulfate, daru halad can be used. Base oil for this preparation is sesame oil (til oil). This oil is kept in mouth (kaval) for some time and then excretion from nose will occur. Oil for nasal instillation (nasya) can be made using 5 types of salts useful to treat vatic pratishyaya. These include saindhav, samudra, bida, audhbhida, samvarchana. [19]

Plant based drugs are always a mainstay of treatment in Ayurveda. Many plants and their formulations were studied and some of them are also having reference in traditional texts of Ayurveda. These are discussed in detail as follows:

Guduchi (*Tinospora cordifolia* Thoms.)

Stem and roots of *Tinospora cordifolia* (Family- Menispermaceae) has been recommended for use in Ayurveda as Rasayana. Traditional Ayurvedic texts of Charak Samhita and Sushrut Samhita also described its usage. Its adaptogen, anti-inflammatory, diuretic (particularly chloruretic i.e. excretion of chloride ions), hepatoprotective activities are well known [22]. Immunomodulatory activity of this herb has been studied on male wistar rats. [23] Bishayi et al. also studied its hepatoprotective and immunomodulatory activities in albino rats. [24] Chemical isolation and structural elucidation studies revealed that this plant contains major phytoconstituents such as tinosporine, tinosporide, tinosporaside, cordifolide, cordifol, heptacosanol, clerodane furano diterpene, diterpenoid furano lactone, tinosporidine, columbin, b-sitosterol. [25] However, identification of a single constituent out of them that has immunomodulatory activity is not yet done. Research is needed to identify activity of each of these constituents and prove it scientifically. Although above facts suggest its usage as immunomodulator, only one clinical study has been found to suggest its effectiveness in allergic rhinitis. Randomized, double blind, placebo controlled trial was conducted in 75 patients for duration of 8 weeks. Tinofend® from M/s. Pharmanza (India) was used as active drug product. With this treatment, total relief was reported in 83% patients from sneezing, nasal discharge in 69% patients, 61% from nasal obstruction, and in 71% from nasal pruritus. [26] Another formulation called Guduchi as a tablet is also available in Indian market from Himalaya Wellness [27].

Ginger (*Zingiber officinale*)

Ginger is traditional food component in India and Indian subcontinent. Its medicinal uses have been reviewed by Kumar et al. [28] Kawamoto et al have found that ginger and its 6-gingerol, a major constituent causes suppression of cytokine production thereby preventing B cell and mast cell activation which results in prevention or alleviation of allergic rhinitis symptoms [29]. Ginger juice was also used in 30 patients in treatment group in clinical trial in China. It was found that symptoms of allergic rhinitis, i.e. sneezing and runny nose were significantly reduced in treatment group [30]. Therapeutic and immunologic effects of ginger in allergic rhinitis were also studied by Aslamrai et al [31]. Currently double blind randomized controlled trial is going on in Thailand which is compared efficacy and adverse effects of ginger vs. loratadine [32].

Shirish (*Albizia Lebbek*)

According to Sushruta and Vagbhata, Shirish is component of Salsaradi Gana and Asanadi Gana formulations in Ayurveda [18-19]. *Albizia Lebbek* is thus used traditionally for treatment of allergic rhinitis in Ayurveda. Yadav et al. showed that Shirishavleha, an ayurvedic semi-solid formulation is having anti-inflammatory activity in allergic rhinitis treatment [33]. This plant inhibits histamine H1 receptor and histidine decarboxylase gene transcriptions, thereby reduces symptoms of sneezing and nasal rubbing in allergic rhinitis [34]. Kajaria et al. studied bronchodilator effect of polyherbal formulation Shirishadi containing Shirisha (*Albezzia lebbeck*), Nagarmotha (*Cyprus rotandus*) & Kantakari (*Solanum xanthocarpum*). Bronchodilator effect was studied in guinea pigs. Further investigation is going on about this drug [35]. Shirish is also a component of Aller-7, a marketed polyherbal formulation for allergic rhinitis in India [36].

Kutki (*Picrorhiza Kurroa*)

Roots of Kutki are well known to be mast cell stabilizer and bronchodilator. It is used in traditional herbal medicines for allergic disorders and asthma [37]. It was also studied for in vivo activity using guinea pigs which were administered with ethanolic extract of kutki in 25 mg/kg per orally. It was found that ethanolic root extract of *Picrorhiza kurroa* has antiasthmatic activity and have beneficial effect in asthma and allergic diseases [38]. AHR 1, a polyherbal formulation, also contains 28mg Kutki. It is found to have antianaphylactic and mast cell stabilizing activity [39].

Anantmool (*Tylophora indica*)

Anantmool has been studied in 1979 in animal model of rat for its anti-allergic activity [40]. This activity might be due to direct bronchodilator property and membrane stabilising and immuno-suppressive effects. According to Umamaheshwari P et al, many studies have confirmed use of Anantmool in treatment of asthma and allergic rhinitis [41]. It is also found to reduce allergenic and inflammatory symptoms [41]. Cross over double blind study in human volunteers was carried out for treatment of allergic rhinitis by Shivpuri DN et al. [42]. These have proved that it is of use in treatment of allergic rhinitis.

Long Pepper (*Piper Longum*)

This herb is traditionally used in Ayurvedic texts. Clinical study was carried out in 32 patients suffering from allergic rhinitis. These were divided into two groups: one group consisting of oral treatment of Haridra Khanda and other group Nasya Taila of Long Pepper (i.e. Pipliyadi taila) and orally Haridra Khanda. These were clinically evaluated for different symptoms. It was found that group wherein both nasal and oral treatments were given showed better results. Nasal piplyadi taila proved effective in treatment of allergic rhinitis. [43]

Turmeric (*Curcuma longa*)

Turmeric is traditional Indian spice used in different foods, and as medicine. Its' antihistaminic, antioxidant and anti-inflammatory properties are well known. Curcumin which is principal constituent of turmeric is also found to be a potent blocker of nuclear transcription factor (NF)-kB, which is linked to a variety of diseases including allergy and asthma [44, 45]. Thakare et al have studied role of curcumin in ovalbumin induced allergic rhinitis in guinea pigs. They found that curcumin treatment significantly reduced the symptoms (sneezing, rubbing frequencies, lacrimation and nasal congestion) and improved the histopathological alterations (reduction in inflammatory cells infiltration) of nasal mucosa in allergic rhinitis. Also, curcumin treatment prevented significantly elevation of serum IgE, IL-4, NO in nasal lavage and eosinophil peroxidase in nasal homogenate [46].

Overview of selected marketed and traditional formulations

Apart from single herbs, Ayurvedic or herbal preparations are available in Indian market for treatment and management of Allergic Rhinitis.

Haridra Khanda

Haridra Khanda is traditional ayurvedic medicine used to treat allergic diseases. Bhav prakash nighantu book has detailed its composition and utility [47]. Composition of it includes Turmeric (*Curcuma Longa*), Milk, Clarified butter (Ghee), Sugar, and additives such as Ginger (*Zingiber officinale*), Pepper (*Piper nigrum*), Pippali (*Piper longum*), Twak (*Cinnamomom zehypanicum*), Sukshma Ela (*Elettaria cardamomum*), Twakpatra (*Cinnamomum tamala*), Amala (*Emblica officinalis*), Hirda (*Terminalia chebula*), Behda (*Terminalia belerica*), Vidang (*Embelila ribes*), Nagkeshara (*Mesua ferea*), Trivrit (*Operculina turpethum*), Musta (*Cyperus rotundus*) and Lauha Bhasma [48]. Clinical evaluation of Haridra khanda was done by Bhakti C et al. [43]. According to results of the study, this formulation showed beneficial effect in 45.45% of patients.

Chitrak Haritaki Avaleha

This is also traditional ayurvedic formulation mentioned in Nasa rogadhikara chikitsa in the text Chakradutta [49]. It contains Chitraka (*Plimbago zeylanica linn*), Amala (*Phyllanthus emblica linn*) Fruit, Guduchi (*Tinospora cardifolia*) Stem, Bilva (*Aegle marmelos Cors*) Root, Gambhari (Gmelina arborea Linn) root, Patala (*Stereospermam suvveolens D C*) Root, Agnimatha(*Cledodendron phlomidis*) Root, Shyonaka (*Oroxylum IndicumVent*), Shalaparni (*Desmodium ganeticum*) Root, Prishniparni (*Urarea picta Desr*) Root, Brihati (*Solanum indicum*) Root, Kantakari (*Solanum suratlense*) Root, Gokshura (*Tribulus terrestris Linn*) Root, Haritaki (*Terminalia chebula*) Fruit, Guda (jaggery), Ginger (*Zingiber officinale*) Rhizome, Maricha (*Piper nigrum Linn*) Fruit, Pippali (*Piper longum Linn*) Fruit, Ela (*Elettaria cardamom*) Seed, Patra (*Abies webbiana Lindle*) Leaf, Twak (*Cinnamon Zeylanica Breyn*) Stem, Yavakshara (Salt), and Honey. Twenty patients were administered with this formulation and it was found to reduce symptoms of rhinitis [50].

Agastya Haritaki Rasayana

Agastya Haritaki Rasayana is sweetened formulation that contains Dashamoola, Pippali (*Piper longum Linn*), Bharangi (*Clerodendrum serratum Spreng*), Kapikacchu (*Mucuna pruriens Bek*), Haritaki (*Terminalia chebula Retz*) as principal ingredients [51]. Chawardol and Jain have suggested use of this formulation in treatment of Allergic rhinitis [52].

Aller-7

Aller-7 is marketed formulation from Interhealth USA. It was originally researched by Natural Remedies, Bangalore, India. This is marketed in USA as food or health supplement. It contains Aller-7 dried bark, fruits, or rhizome of seven extensively used Indian medicinal plants, including *Phyllanthus emblica* (fruit) extract, *Terminalia chebula* (fruit) extract, *Terminalia bellerica* (fruit) extract, *Albizia lebbek* (bark) extract, *Zingiber officinale* (rhizome) extract, *Piper longum* (fruit) extract, and *Piper nigrum* (fruit) extract [53]. Prathibha N et al have done preclinical studies on this formulation using albino mice [54]. Efficacy of it in demonstrating utility in reduction or alleviation of symptoms of allergic rhinitis was shown by Saxena VS et al [55]. Guo R et al have also shown its utility in allergic rhinitis [56].

Bresol Tablets

This is marketed formulation available for allergic rhinitis. It is available from Himalaya Healthcare [57]. It contains Turmeric (*Curcuma longa*), Tulsi / Basil (*Ocimum tenuiflorum*) and Vasaka (*Adhatoda vasika*). It was found that Bresol provided symptomatic control, and prevented recurrence of allergic rhinitis [58]. It has also been found effective in treatment allergic diseases in children [59].

CONCLUSION

Considering high prevalence of allergic rhinitis and failure of currently available modern medicine (allopathic) treatments, it is now essential to understand utility of herbal (ayurvedic) formulations. Properties of individual herbs need to be studied using modern analytical and instrumental techniques and clinical evidence should be generated. Combination of different herbs may provide symptomatic relief and can provide protection from recurrence of disease. Although some of the companies have made research and launched formulations in market, still more clinical evidence is needed. Traditional formulations that are mentioned in ancient texts of Ayurveda need to be studied in great detail using proper and appropriate clinical trial protocols.

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