



ORIGINAL ARTICLE

Ethnomedicinal treatment of Asthma in Imphal district of Manipur, India

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ABSTRACT

*Asthma one of the most widely prevalent diseases characterized by an increased responsiveness of the trachea and bronchi to various stimuli, affecting today in millions of all ages, irrespective of age and disheartening to the rest of the world for not getting completely cured through medication, find its cure with traditional treatment using flowers of *Tagetes erecta* L. and *Nymphaea nouchali* Burm. f. by the meiteis of west district of Manipur. Twenty asthmatics including infants from ten families with asthmatic family history were treated continuously for a month with the formulated dose of decoction of the flowers during 2006 find disappearance of the recurrence of the disease from the last six years.*

Key words: Flowers, traditional treatment, trachea and bronchi, ant-asthmatic

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INTRODUCTION

Imphal, the capital city of Manipur is centrally located in a oval shaped valley with an area of 1843 sq km comprising 8.25 % of the total area of the state stretching 57.92 km from North - South to 32.19 km in East - West with a population of 967344 [1], i.e. 35.54% of the total population of the state dwelling in 354 villages and 10 towns and 4 urban local bodies. The Imphal valley is mainly inhabited by the Meiteis, the major community of the state. The valley is located centrally at 784 m altitude, 24.30° N to 25.04° N Latitude and 93.45° E to 94.15° E longitude [2]. It is surrounded by Senapati District on the north, on the east by Thoubal district, on the south by Thoubal and Bishnupur Districts, and on the west by Bishnupur Districts and Senapati. An average annual temperature of 20.4° C and 1320 mm of precipitation with a maximum and minimum humidity of 83 % and 52 % respectively were experienced in the valley [3]. A humid sub-tropical climate with cool and dry winters, a warm summer and a moderate monsoon season is experienced in the valley. Subtropical, tropical wet evergreen and tropical moist deciduous forests also prevails in the valley. Meiteis are having tremendous ethnomedicinal knowledge and use number of plant species in the treatment of various diseases. *Asthama*, one of the most prevalent diseases that occur in all the age groups in millions around the world and across the country also occurs among the Manipuris. It is due to the spasms of the smooth muscles lining the walls of the smaller bronchi and bronchioles, causing the passage to close partially, troubling exhalation even sometimes alveoli remaining inflated during expiration. The mucus membranes lining the "hypersensitive" respiratory passages of asthmatics are irritated and secrete severe excessive amount of mucus clogging the bronchi and bronchioles worsening the attacks causing wheezing, shortness of breath (difficulty in breathing), chest tightness, and coughing, strain in air exhalation and in severe cases, becoming almost invalid, and the complicates the condition called as Emphysema. Physical, psychological, emotional, viral infections (80% of asthma attacks in adults and 60% in children), indoor air pollution from newsprint & other literature such as, junk mail leaflets & glossy magazines and environmental extremities (cold air, exercise or exertion, allergen - air pollution containing, smoke, smog, industrial effluents, monochloramine (NH₂Cl), dichloramine (NHCl₂) and trichloramine (NCl₃), waste from common household pests, viz. house dust mite and cockroach, grass pollen, mould spores, and pet epithelial cells) trigger asthma. It may be generated and triggered in brain itself. By mere looking at particular thing, to which one is allergic, could bring asthmatic attack. Hormonal changes in adolescent girls and adult women associated with their menstrual cycle can lead to a

worsening of asthma. Some women also experience a worsening of their asthma during pregnancy whereas others find no significant changes, and in other women their asthma improves during their pregnancy. Alternative Asthma and Bronchitis treatment including osteopathic, chiropractic, physiotherapeutic and respiratory therapeutic manoeuvres, but there is insufficient evidence to support or refute their use in treating asthma [4]. In the Indian context various yoga practices, ranging from integrated yoga programs —"yogasanas, Pranayama, meditation, and kriyas"— to sahaja yoga, a form of meditation claim to cure from the disease [5,6]. Ayurveda recommends use of herbs such as Ajwain, Harad, Hing, Ajamoda, Lavanga, Sunthi and others. Yet, the world community claims asthma as one of the completely incurable disease with 300 million currently suffer from asthma, markedly affecting their quality of life, their families, and negatively impacting the socio-economic welfare of society. WHO estimate 250,000 avoidable asthma deaths occur in the world. It is the most common chronic disease among children[7]. There was a sharp increase in the prevalence, morbidity, and mortality associated with asthma beginning in the 1960s and 1970s in the so-called "Westernized" countries of the world. Globally, 220 – 520 million people may suffer from food allergy and allergies are the main cause of onset of asthma. Asthma and other atopic disorders may be more concentrated among those of lower socio-economic status because they also bear a disproportionate burden of exposure to suboptimal, unhealthy environmental conditions (e.g. physical, social, and psychological conditions), while atopy and asthma are more prevalent in developed and industrialized countries compared with undeveloped and less affluent countries World Allergy Organization, invite 84 of its member societies to contribute to the White Book by participating in an online survey on the current status and needs of the specialty in their respective country or region[8]. Mortality of Koreans resulting from chronic lower respiratory diseases including asthma increased from 12.9 to 22.6 deaths per 100,000 of the population between 1992 and 2002 [9]. In the state of Manipur so far two documentations were made on the anti-asthmatic plants by [10] and [11]. Out of the 19 plants reported by Devi, 09 where similar to the 44 anti-asthmatic plants reported by Khan *et.al*.

The present study on asthmatics started since 1990 when author's elder brother, Ayam Advocate Singh (AAS) suffers from the chronic *Asthma and Bronchitis* recurring every year during May-June since childhood. After medication with *Albutamol*, *Brufen* etc. there was temporary relief but the condition worsen every year and even admitted in hospital under intensive care with artificial oxygen supply. Mention can be made that author's grandfather "Ayam Komol Singh" and grandmother "Maibam Maipakpi Devi" both had asthma till their end. Eldest son of AAS, "Ayam Vision Singh" also developed asthma which became chronic for 5 years; half cousin of AAS, "Ayam Naresh Singh" and wife of the half cousin "Takhelambam Jaya Devi" and their youngest son "Ayam Khaba Singh" also had chronic *asthma* and respiratory problems more than 15 years. Similar chronic asthmatic family history was found in some of the families. The results of genome screens for asthma related traits in 11 different populations identified at least 18 genomic regions that probably house asthma/atopy genes. The most consistently replicated regions are on chromosomes 5q, 2q, 13q, 6p and 12q [12].

Unlike the earlier reports, the natives of Imphal district use the purple flower of *Nymphaea nauchali* Burm. f. (in Manipuri, *tharo ahangba* - photo 1) of Nymphaeaceae with the yellow flower of *Tagetes erecta* L. (in Manipuri, "*sanarei athonba*" - Photo 2) of Asteraceae in the treatment of *Asthma*. *Tagetes* is found wide spread in terrestrials while *Nymphaea* in ponds. Elderly female households (in Manipuri *abok* meaning granny) sold flowers and fruits in small vendors which are use for offering to Gods and Goddesses (Photo 3). A single *N. nouchali* cost Rs. (10-15) while 5 *Tagetes* flower cost around Rs. (10-15) at local vendors.

MATERIAL AND METHODS

Survey for anti-asthma: Survey was conducted in 2000 and the information on anti-asthmatic plants were collected which was mostly similar with the one earlier reported by Dr. Devi and also recently reported by Khan *et.al*. With the advancing complicacy of the *asthma* in the family even after allopathic treatments, herbal treatments were attempted using different already reported anti-asthmatic plants since 2001. There were no noticeable results, until treatment was started with the formulated decoction of *Tagetes erecta* L. and *Nymphaea nauchali* Burm. f. since 2006 - 2008.

Plant specimen identification: Plants were collected and identified with the help of *Flora of Ceylon* [13] and *Flora of Majuli* [14]. Photographs of *Tagetes erecta* L. (Photo 1) and *Nymphaea nauchali* Burm. f. (Photo 2) were taken during the field work with Sony Cyber-Shot, 14.1mega-pixel camera. The plants are easy to obtain from the market as well as they are sold in local vandors and in front of temples for offering to God during worshipping (Photo 3).

Local people were interviewed on the incidence of asthma and the family history of asthma prevalent in the households. Local traditional healers/herbalists were consulted and interviewed on the uses of *Tagetes erecta* L. and *Nymphaea nauchali* Burm. f. for the treatment of *asmthma*, *bronchitis* and

emphysema. Voucher specimens [Wangkhei Palace compound, Imphal East, *Ayam 000203*, dated 04.06.2006, and Bhamon Leikai, Imphal East, *Ayam 000204*, dated 04.06.2006] have been deposited in the Herbarium of the Department of Life Sciences, Manipur University.



N. nouchali (Young stage)



N. nouchali (Pollination by bees)



Photo 1: *Nymphaea nouchali* Burm. f. a) Bunch of flowers b) single open flower



Photo 2: *Tagetes erecta* L. (flower)



Photo 3: Vendor selling *N. nouchali* and *T. erecta* and other flowers and fruits for offering to Gods and Goddesses

Formulation of decoction: Decoction is prepared in 2:1 ratio of two flowers of *Tagetes erecta* L. with one flower of *Nymphaea nauchali* Burm. f. in a quantity of 200 ml potable water and boiled at 100 °C for 5 mins.

Treatment dose: A quantity of 100 ml and 50ml filtrates of the decoction are administered to adults and children respectively, twice daily, continuously for a month or whenever respiratory trouble occurs.

Twenty five volunteer patients belonging to 10 families with asthmatic family history were treated giving required different doses of treatment i.e. in average (25–50) ml of the decoction filtrate twice daily for 10 - 15 days in children and (50 -100) ml twice daily for 10-20 days in adults or even a month continuously in the case of aged person and also depending on the level of incidence of *asthma*.

RESULTS AND DISCUSSION

The following is a new method of treatment of *asthma* using *Tagetes erecta* L. and *Nymphaea nauchali* Burm. f. by the meiteis of Imphal District. In this method, only the flower of *Tagetes erecta* L. which is yellow coloured is preferred, in the absence of which orange flowered *T. petula* (*sanarei angangba*), or very small flowered, *T. minuta* (*sanarei macha/hao sanarei*) are used along with *tharo asungba* against *asthma*.

N. nouchali is claimed to have high amount of phenolic compounds and flavonoids of variable fractions soluble in different solvents responsible for antioxidant, antibacterial and antifungal activity [15,16]. Similarly *T. erecta* flower is also used in *Thiland* as food and claims to contain very high total flavonoid content (TFC) (68.9 mg rutin extract/g dry weight) and claim to skin complaints, wounds and burns, conjunctivitis and poor eyesight, menstrual regularities, inflammation, antiviral and antitumour [17]. Report on the use of these plants for the treatment of *asthma* is hardly mentioned elsewhere. Moreover, using of these two plants separately does not give a noticeable relief against *asthma* during the study. Antiasthmatic effect was also decrease during overcooking, and boiling for decoction preparation is preferred in a limited amount of water, which was carried out in the normal household utensils or kettle. Treatments of *asthma* to a total number of 25 volunteer patients belonging to 10 families with asthmatic family history requires different doses of treatment based on age and intensity of the disease. In average (25–50) ml of the decoction filtrate twice daily for 10 - 15 days in children and (50 -100) ml twice daily for 10-20 days in adults or even a month continuously in the case of aged person and depending on the level of incidence of *asthma*. All the asthmatics show dramatic recovery after a specified dosages treatment and never recur till date.

1. After two to three days treatment (i.e. with 200 - 600 ml decoction) all the blockages were relieved temporarily, and for the permanent healing the same frequency of treatment were continued for 10-30 days. A large Number of patients with acute *bronchitis* had been cured through this practice, without expensive treatment or surgery.

2. Five out of the 25 asthmatic patients were infants and were relieved from the asthmatic symptoms after 2-3 days treatment but recurs during the change of season, extra exhaustion or during weakening, whereas if the treatment last up to 10-20 days it doesn't recurs. 15 adults/mature asthmatic patients got relieved from the symptoms in (4-5) day's treatment, under the prescribed dosage of (100-200) ml with a frequency of twice daily. Remaining 5 asthmatics are aged above 50 years they show lesser response in the treatment and with age the required frequency of treatment increases.

In addition, 100 % patients show positive response to the treatment. Children and adults show quicker positive response to the treatment than the aged persons. About 80% of them were cured without a sign of recurrence for more than 6 years after the treatment under the frequencies mentioned above for a duration of one to three weeks and the remaining 10 % were also cured within a month of the treatment.

During the survey it was found that nearly 20% of the asthmatics belong to wealthy families with hygienic livelihood and 30% from the middle class families and the rest 50% from the poor families with little or no sanitation. Poor and middle class families maintain low hygienic conditions with moist or damp house-floors and surroundings. Therefore, living in the moist and damp environment could be one of the possible reasons for the development of their *asthmatic* problems. Most of the wealthy families have family pats (cats/dogs/pigeons/chicks etc.) and the fur of the animals could be one of the stimulating factors of *asthma* in the wealthy families. Difference in the dosage/frequency/duration of the treatment required for curing *asthma* patients could be due to difference in severity of occurrence and age factor. The more sever the *asthma*, the higher the frequency, dosages and longer duration of treatment essential. This could be the new report from Manipur on the method of use of the synergistic effect of *Tagetes erecta* L. and *Nymphaea nauchali* Burm. f. for the treatment of *asthma*. Since individual treatment of the plants show no remarkable effect it is possible that the extract from the two plants have a synergistic effect. For the more authenticity LC-MS, NMR or crystallography could be done to determine the synergistic

bioactive compounds and in discovering the drug against *asthma*, the positive effect of which is already proved by crude extract treatment in the form of aqueous decoction filtrates to *asthmatics*.

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