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Research Article

Use of Traditional Herbal Medicines for the Treatment of Asthma in Balochistan

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Abstract: The use of traditional herbal medicine is still very popular in Pakistani Society. The present review paper aim on various traditional herbal medicines and its extracts used for the treatment of Asthma are discussed. It is prevalent and common in Villages and mountainous areas of Balochistan, where medicinal facilities are limited, so the people are rely on traditional herbal treatments for their diseases. Mostly herbal treatments are economical and very effective having fewer side effects. This review reveals that some herbal plants and their extract have Antiasthmatic properties. Unfortunately, scientific researches on herbal drugs are rare in term of controlled clinical trials. Hopefully, Scientific research will open new herbs in therapeutics.

Keywords: Asthma, Balochistan, extracts, herbal medicines, safety, traditional medicine

INTRODUCTION

Balochistan is the largest province, representing 44% of the land cover of Pakistan. The climate is dry to semiarid, ranging from coastal tropical to cool temperate in the north. Major ecological zones are; sub tropical forest, dry temperate forest, tropical dry mixed deciduous forest and desert and mangrove forest. Baluchistan is sanctified with diverse fauna and flora due to various ecological conditions (Anonymous, 2009).

Asthma is a disease of the air ways which is chronic in nature. The inflammation of the airways results in increased contractibility of the smooth muscles which surrounding the airways. The causes of asthma are environmental and genetic. World Health organization (WHO, 1990), reported that More than 80% people used Traditional medicine in Asia for the treatments of various chronic diseases including Asthma. Traditional medicine is generally the sum total of skills. Practices and Knowledge based on the beliefs, valves, theories and Personal experiences, among different cultures, that used to prevent diseases spreading, maintain health and reduce diseases or treat it almost both mental and physical wellness(Acharya and Shrivastava, 2008; Fabricant and Fransworth, 2001). A large proportion of population in developed and under devolved countries of the world relies on the herbal treatments. In the long run of history herbal medicine is the most popular form of traditional medicine. This information transfer from one generation to the other generation, many herb shows different therapeutic responses. e.g., *Thymus Serpyllum* L. used orally and topically by common people in Balochistan for treatment of Asthma and skin problems, in winter seasons, almost in 85% cases, it was effective while 15 % it expressed no effects. Such a herbal treatment showed very good efficacy in some cases and had no effects in some other cases. Asthma is a disease characterize by inflammation, airway narrowing, chest tightness, recurrent episodes of wheezing, coughing and itching. (Holgate and Polosa, 2008). Almost 300 million people affected worldwide and its number increasing day by day. It is associate with changes in the level of mast cell, eosinophil, lymphocytes, inflammatory cells and other cytokines cells products. Asthmatic patients have high number of IgE level that mast cell receptors (Castillo and De Beer, 1947). The IgE antibody and antigen interaction releases the mediator such as histamine, leukotrienes and prostaglandins. Which lead to inflammation and bronchitis (Tripathi, 2001). Incidentally, no treatment is

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available and mostly steroidal preparations are used. Which have a lot of adverse effects and expensive. Due to its side effects, economical conditions and lack of satisfactory success of this treatments. The patients are switching towards complementary and alternative medicine to treat asthma. Which possess Anti asthmatic, Anti histaminic, Anti allergic activity and smooth muscle relaxant (Kumar *et al*., 2009). Some commonly used herbal plants, in Balochistan, discussed for asthma briefly.

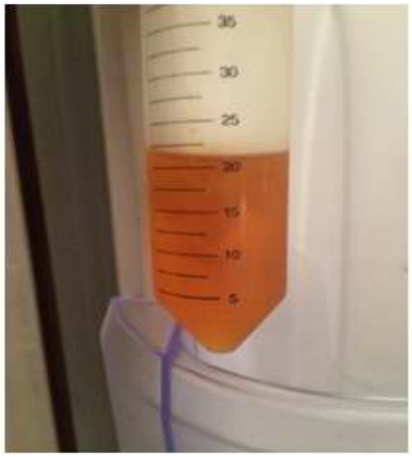
PLANTS USED FOR THEIR EFFICACY IN ASTHMA

Turmeric: *Curcuma longa*, is a rhizomatous perennial herb of ginger family (Zingiberaceae), having pointed leaves, yellow color flowers and almost 3 to 5 feet height. Pharmacologically it showed anti-cough and expectorant activity (Saikat*et al*., 2015). It is normally used as color dye and cooking part in Asian countries. It has been widely researched and observed to have a lot of uses. Valuable uses are, dermatology, cancer, diabetes, intestinal and anemia disorder. In Asthma, it has magnificent healing activity. It is an antiseptic and heals the cut or burn. Turmeric has been reported in anti inflammatory, antiseptic and antibacterial properties (Gruenwald *et al*., 2007; Agarwal *et al*., 2007).

Liquorice: *Glycerrhizaglabra* is known as Spanish Liquorices. It is a perennial plant having pinnate leaves and 1 cm long flowers. Its root traditionally used as demulcent in the treatment of sore throat, cough, expectorant and bronchitis(Monica Damle) (Patel *et al*., 2009). It is also reported in the treatment of antiulcer, laxative effect and antiviral, it is used in the healing of duodenal ulcer (Murrary, 1998). Glycyrrhizin use to inhibit the histamine release from rat mast cell and carbon tetrachloride induced liver lesion and macrophages mediated cytotoxicity. The Anti allergic and anti-inflammatory activity have been reported which attributed like the corticosteroid like activity of glycyrrhizin and glycerrhitic acid which potentiate the activity of corticosteroids (Hikino, 1985; Damle, 2014; Patel *et al*., 2009).

Eucalyptus: *Eucalyptus globulus*Labill (*E.globulus*) belonging to the family of (Myrtaceae). A big tree with smooth base up to 3-20 m high, oval oblong leaves, up to 30 cm long, flower with short pedicles. The main end uses of the Eucalyptus oil are medicinal, flavor and Industry. The Eucalyptus oil used in the pharmaceutical formulations to treat the problems of cough, cold and Influenza, in products lozenges, cough sweets, ointments and Inhales, its Antibacterial effect on pathogenic bacteria in respiratory tract (Salari*et al*., 2006). Inhaled Eucalyptus oil vapor is a decongestant. And treatment for bronchitis (Lu *et al*., 2004). It is also reported that control the increase mucus secretion of asthmathrough anti-inflammatory cytokines control

(a)



(b)

Fig. 1: *Thymus serpyllum* L. plant and thymus oil

(Juergens*et al*., 2003, 2004)Topically applied as anti inflammatory and analgesic qualities and liniment ingredients (Göbel*et al*., 1994; Hong and Shellock, 1991).

Camphor: *Cinnamomumcamphora*T Nees and Eberm belonging to a family (lauraceae) is an ever green tree moderate in size, smooth twig compressed. Camphor is the active ingredient in the in the vapor balm formulations, (Vicks vapor rub) it can readily absorb through the skin, used in cold sore, skin diseases and as a cough suppressant and bronchial decongestant. In ancient time it is used totreat swelling, sprain and inflammation (http:// www. drugs. com/ cdi/ camphor-liquid.html). It is also reported that camphor oil is used as antifungal and antibacterial activity in an in vitro study. It has been used as sedative, Tonic, externally in liniments for joints and pain (AbiyaChelliah, 2008).

Thyme and Wild Thyme: *Thymus serpyllum* L. is a small bushy herb shortly, stalked leaves. They are 6 mm long, the flowers are pinkish and whitish. Thyme herb extract oil (Fig. 1) is applied directly to inflamed

(a) (b)

Fig. 2: *Hedera helix* L plant and extract

parts of body and dry herb has been used to treat cough, gastro problems, dyspepsia, Pertussis, bronchitis, tonsillitis and laryngitis (as a gargles). Topically applications of thyme oil has been used in the healing of common cold, minor wound, oral cavity problems and as antibacterial as a oral hygiene. It is also reported as Thymus and essential oil in many drugs products as syrup for the treatment of many respiratory problems, as antiseptic, healing ointment and inhalation (Suleyman *et al*., 2003). It is also used in the Eczema (Benítez*et al*., 2009; The British Pharmacopeaia, 2015).

Echinacea: *Echinacea Pallida* is aherbaceous hardy species with either branched or simple stems. The shape of leaf varies from laneolate to ovate. The roots are either fibrous or taproots in form *Echinacea* as traditional herbs used for the common cold, influenza and respiratory infections. it is also reported in topical wound healing. (Shah *et al*., 2007; Woelkart*et al*., 2008) Its anti inflammatory mechanism of action is also reported (Chicca *et al*., 2009).

IVY, *Hedera helix* L: *Hedera helix*L.belonging to a family (Araliaceae).It is an evergreen ornamental plant, woody climber, covering the walls with a canoy of leaves. The leaves are shiny, leathery, with 3-4 triangular lobes. The berries are purplish-black and globular. Both barriers and leaves are use in herbal formulations. This is an ornamental herbal plant and its extract (Fig. 2), Hedera saponins are used as expectorant and antifungal. It is used for upper respiratory tract infection (Holzinger and Chenot, 2010). It has antioxidant properties, (Gülçin *et al*., 2004) antispasmodic property (Trute*et al*., 1997). They are effective in chronic bronchial asthma in children. (Bolbot*et al*., 2004; Hofmann*et al*., 2003). It has been used as anti allergic (Jones *et al*., 2009). It is also reported that it has good anti-inflammatory (Suleyman *et al*., 2003) and anti arthritic activity (Rai, 2013). The healing of respiratory infections have been reported that hederacoside C is converted the alpha-hedrine by estrases as well as its glucone hederagenin, acts as G protein connected beta 2 adrenergic receptors of the lug cells, in actions it shows the Beta 2 sympthomimetic effect. Topically its is used to treat cellulite with success (Hegener*et al*., 2004).

Menthol: Menthol is a monoterpene extracted from mint oil especially (*M arvensis*,). Menthaspp is a herbaceous perennial plant. It grows 10-60 cm and sometimes up to 100 cm tall. The leaves rise in pairs opposite side 0.79-2.56 in. The flowers are purple sometime (pink or white), traditionally it is used for cough, digestive and gall bladder problems. The extracted oil is used topically for pain and ache. Its extract menthol used in food, chemical drinks, cigarettes and cough medicines (Maria *et al*., 2015) it is widely used as dental care and topically used as antibacterial agent. Peppermint oil is documented for its anti-inflammatory, decongestant, Sinus and lung congestion are also treated from this oil (Tassou*et al*., 1995; Ravid*et al*., 1994).

Garlic: *Allium sativum*is commonly known as "garlic". *Allium sativum* is an herbaceous erect, bulbous plant 30-60 cm. high. The bulb gives number of narrow grass like leaves above ground. Flowers are numerous in number some time absent. It has been used in medicine for the healing of respiratory tract infections, the herb used as carminative for the healing of diarrhea. It is also reported for the treatment of otitis media, common cold, expectorant, sedative, asthma, bronchitis, antioxidant, antimicrobial (Jabar andAl-Mossawi, 2007). Topically for Wart and Corn treatment, in many cultures consider as power of healing (Timbo*et al*., 2006; Török*et al*., 1994; Dehghan*et al*., 2005).

Ginger: *Zingiber officinalis* is known as ginger, mostly it is used in spice. Traditionally it is used in the treatment of colds, flu and stimulate the appetite, It is used as mast cell stabilizer (Mathew *et al*., 2009). It is also has used as narcotic analgesic and rheumatic, migraine head ache and muscular disorder. It is a power full expectorant widely used in colds, cough and chronic bronchitis (Gosh *et al*., 2011).

Adhatodavasica: *Adhatodavisca* is a perennial shrub small in size, reaches average 3.0 m height. Having leathery leaves, the leaves grow in opposite of each other stalk, the flower are large, white in color and fruit is small in size. Traditionally it is used in the healing of whooping cough, colds, cough, asthma and chronic bronchitis, It has been used as anti ailminthic, antispasmodic and sedative expectorant. it is also used in the well known medicine (Glycodin) for asthma, bronchitis and other respiratory problems (Dey, 1980). The plant has been included in WHO manual for the treatment of asthma and cough (WHO, 1990). The herbal formulation is also used by many Practitioner for the antimicrobial, antiseptic, expectorant and antibacterial (Gangwar and Ghosh, 2014).

Juniper berry: Juniper is ever green shrub, vary in shape and size from 20 m up to 131 fit high. the leaves are scaly or needle like, fruit is in berry like structure 4-27 mm, with 1-12 un winged. They are aromatic mostly use in spice (Ogren, 2015). Traditionally it has been used to treat diabetes(McCabe *et al*., 2005). The

(a) (b)

Fig. 3: *Ephedra* plant and extract

herbalist physician Nichole Culpeper used the ripen barriers for Sciatica and asthma. And speed up child birth. Juniper berry oil has been used for the respiratory infection and sore throats (Tunón*et al*., 1995). It has been reported there are 87 active ingredients present in the berry oil. It has antifungal, antibacterial, antimicrobial and antioxidant activity. juniper has reported for anti inflammatory activity (Höferl*et al*., 2014).

Rosemary: *Rosmarinus officinalis* is perennial herbaceous ever green plant. Leaves are needle like structure, flowers are in different color ranging in purple, pink, blue and white. It is grown for its flavor and fragrance. Traditionally used for skin inflammation and as memory enhancer. It is volatile oil is used for bath water or message to relieves, the skin eczema. Rosemary volatile oil is used to relive the whooping cough, asthma, cold bronchitis and other respiratory infections (Room, 1988).

Ephedra:*Ephedra* belongs to the family Ephedraceae. It is a prostrate or erect, ever green shrub, 20-90 cm high. glaucous green, branched erect, with reddish brown nodes, flowers in summer in cold regions. It is found in high altitude and mountainous areas in Balochistan and its extract uses locally for asthma and rashes (Fig. 3). The Traditional Chinese Medicine Ephedra herba has been used for many years to treat allergic rhinitis, common cold, hay fever, nasal congestion, edema and flue (Konar and Singh, 1979; Nawwar*et al*., 1985; O'Dowd *et al*., 1998). The Ephedra has been used as bronchodilator in asthma, it is also used for urticaria (Miller, 1926). Narcolepsy, digestive problems, bradycardia, narcolepsy and anti-inflammatory. It is also reported the other medicinal used, as a analgesic, antitussive, antibacterial, antiviral agent immune stimulant and expectorant. Its oil showed inhibitory effect against influenza virus (Bagheri-Gavkosh *et al.*, 2009; Soltan and Zaki, 2009).

MATERIALS AND METHODS

The current study was conducted from May, 2015 to June, 2016. The information about the plants that are mostly used against Asthma in Balochistan was asked from local population of Ziarat, Sherani and Kalat districts of Balochistan. The information on medicinal plants collected especially about the extracts and extraction methods exercised by the local community of this area for asthmatic problems. They use all these 14 plants but the extract of *Ephedra*, *Thymus serpyllum* L. and *Hedera helix* L. extract widely have been used orally as well as topically for congestion, bronchitis and skin problems, described after gathering information from general local people, experienced aged rural folk, traditional herbal medicine practitioners, local herbal drug sellers and concluded them by consulting literature. The Aerial parts of *Ephedra*, *Thymus serpyllum*L. and*Hedera helix* L. including young green stems with leaves reduced up to sheaths, were collected from six different places. *Ephedra*, *Thymus serpyllum*L. plants were growing at an altitude ranging from 600 to 1100 m above the sea level. Because *Ephedra* lives only in impervious places constituted by rocks and cliffy limestone, therefore threatened of reduction in number and density of population, only a 1.293 to 5.163 kg of plant material were collected in each collection site. The plant material was collected from different site of the hills upper, middle and lower of all wild and forest regions of District Ziarat, Sherani and District Kalat. The plants were then identified with the help of available literature (Dikli´c, 1974; Bensky*et al*., 1986; O'Dowd *et al*., 1998; Gruenwald *et al*., 2007). Voucher specimens were stored at in the Herbarium of Botany Department University of Balochistan, Quetta. *Ephedra* and *Hedera helix* L. Plants were soaked and put in hydroalcholic solution for 10 days and filter. Thymus oil extract by steam distillation process locally.

RESULTS AND DISCUSSION

The extraction process as a preliminary step plays a critical role in quantitative analysis and method development scientifically, but in this study the people believed to use different extracts of hydroalcholic solvent, Steam distillation and decoction methods used for the extract. The plants mentioned in this study is very accepted among various population of Balochistan and played a key role in the Phytotherapy of this region. In this study it was observed that 45% among men and 55% among women were well known about plants and its extract. It was also concluded that the aged people had more understanding about the folk uses of medicinal plants for asthma and believed its topical application play vital rule for asthma and skin problems, especially in eczema and urticaria. All these plants give good extracts and also they put to cover it and use for long time. It was further found that most of these plants are already known for similar uses and most species had multi uses.

CONCLUSION

From the above review article and study, we can conclude that the traditional herbal medicine is noninvasive and natural gift for us. Although it is safe,

economical and easily available as compared to the synthetic medicine. Here it does not mean that herbal medicines are 100% safe. There is a need for more scientific, *In vivo* and *In vitro* studies to investigate the safety and efficacy of these traditional herbal medicine in the present era. It is expected to open new horizons in therapeutic field.

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