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Review Article

A Review On Traditional Medicine Used As Treatment For Conjunctivitis

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Abstract

There are numerous medicinal plants available in the world to prevent or cure diseases. An ophthalmic problem affects most of the population. Some of these can be treated with antibiotics and steroids but the prolonged use of these drugs has side effects. The eye is a paired organ, located in the orbital cavity and its function is to capture images that are sent to the cortical vision centre.The common eye infections are conjunctivitis, blepharitis, internal and external hordeolum, microbial scleritis, canaliculitis, keratitis, dacryocystitis, preseptal cellulitis, orbital cellulitis, endophthalmitis and panophthalmitis. Ocular medications such as eye drops or an ointment are used to treat and prevent eye diseases. Many traditional herbal eye drops prepared from many medicinal plants combination, could cure ophthalmic disorders. This review briefly explains the herbal drugs used in treatment of conjunctivitis which provides a platform for researchers to develop new traditional herbs.

Keywords: conjunctivitis, herbal drugs, ocular diseases, medicinal plants, eye disorders

INTRODUCTION

In many parts of the world medicinal plants have been used as traditional treatment for numerous human diseases for thousands of years. In rural areas of developing countries, herbal materials continue to be used as the primary source of medicines.Herbal eye drop is a polyherbal formulation used for anti-inflammatory, antihistaminic effect and degenerative ophthalmic disorders. Biswas *et al.*,[1] reported that many traditional herbal medicines used in curing ocular diseases are now being gradually increased in modern medicine science. The Unani eye drop formulation is also now being used for ocular infections and it is prepared under aseptic conditions as per the method in unani pharmacopeia with slight variations (Anonymous). The herbal eye drop formulation is prepared for beneficial effects in allergic and inflammatory conditions of the eyes.For treatment of eye ailments the herbal drugs used dates to the days of Rigveda, Bhrigutantra, Asvini kumara, Charaksamhita and Sushrutsamhita. The W.H.O has revealed the importance of herbal cures and it has been active in creating guidelines and standards of botanical medicine. Various in-vitro experiments and animal studies described the therapeutic effect of medicinal plants in ophthalmic disorders. Ocular medications such as eye drops or an ointment are mainly used to treat and prevent eye diseases. Many tradi-

tional herbal eye drops are prepared from many medicinal plants combination which cures ophthalmic disorders [2].

The eye is a paired organ, located in the orbital cavity and its function is to capture images that are sent to the cortical vision centre [3]. Due to the constant exposure to the external medium, the eyes, along with associated structures, are subjected to intense microbial contamination [4]. The eye is a unique organ, which could be infected by bacteria, fungi, parasites, or viruses. The external ocular surface acquires a microbial flora at birth and some of the commensals may become resident flora in the conjunctiva and lids and have the potential to turn into pathogens. Apart from the resident flora, any microorganisms, from the environment, can form a transient flora in the eye. The most common eye infections include blepharitis, styes, conjunctivitis, chalazion, canaculitis, dacryocystitis, corneal ulcers, orbital cellulitis, keratitis and endophthalmitis etc., [5].

Conjunctivitis

Conjunctivitis is classically defined as conjunctival hyperaemia, associated with a discharge which may be watery, mucoid, mucopurulent or purulent *i.e*., inflammation of the conjunctiva.Conjunctivitis may be bacterial, viral or chlamydial and it is a common cause of unilateral or bilateral infected red eyes[6].

Acute catarrhal or mucopurulent conjunctivitis

Acute mucopurulent conjunctivitis is the most common type of acute bacterial conjunctivitis. It is characterised by marked conjunctival hyperaemia and mucopurulent discharge from the eye. The most common etiological agents are *Staphylococcus aureus, Koch-Weeks bacillus, Pneumococcus species and Streptococcus species.* Mucopurulent conjunctivitis generally accompanies exanthemata such as measles and scarlet fever [7].

Acute purulent conjunctivitis

Acute purulent conjunctivitis, also known as acute blenorrhea or hyperacute conjunctivitis is characterised by a violent inflammatory response. It occurs in two forms:

Adult purulent conjunctivitis

The disease, adult purulent conjunctivitis, affects adults, predominantly males. Commonest causative organism is *Gonococcus* but rarely may it be *Staphylococcus aureus* or *Pneumococcus species.* Gonococcal infection directly spreads from genitals to eye. Presently incidence of gonococcal conjunctivitis has markedly decreased [8].

Acute membranous conjunctivitis

It is an acute inflammation of the conjunctiva, characterized by formation of a true membrane on the conjunctiva. Now-a-days it is of very-very rare occurrence, because of markedly decreased incidence of diphtheria. It is because of the fact that immunization against diphtheria is very effective. The disease is typically caused by *Corynebacterium diphtheria* and occasionally by virulent type of *Streptococcus haemolyticus.*

Acute pseudo membranous conjunctivitis

Acute pseudo membranous conjunctivitis is a type of acute conjunctivitis, characterised by formation of a pseudo membrane (which can be easily peeled off, leaving behind intact conjunctival epithelium) on the conjunctiva[9]. It may be caused by following factors: Bacterial infection - Common causative organisms are *Corynebacterium diphtheriae* of low virulence, *Staphylococci species, Streptococci species, Haemophilus influenza* and *Neisseria gonorrhoea.* Viral infections such as herpes simplex and adenoviral epidemic kerato-conjunctivitis may also be sometimes associated with pseudo membrane formation.Chemical irritants such as acids, ammonia, lime, silver nitrate and copper sulphate are also known to cause formation of such membrane.

Chronic bacterial conjunctivitis

Chronic bacterial conjunctivitis, also known as 'simple chronic conjunctivitis', is characterised by mild catarrhal inflammation of the conjunctiva. *Staphylococcus aureus* is the commonest cause of chronic bacterial conjunctivitis. Gram negative rods such as *Proteus mirabilis*, *Klebsiella pneumoniae, Escherichia coli* and *Moraxella lacunata* are other rare causes [10].

Viral Conjunctivitis

Viral conjunctivitis is bilateral and more contagious, with redness developing acutely in one eye first, followed some days later in the second eye. The symptoms include ocular discomfort, epipho-

ra, watery discharge, diffuse conjunctival hyperemia, pre-auricular lymphadenopathy, unilateral or bilateral, keratitis and decreased corneal sensitivity. Viral infections of conjunctiva include adenovirus conjunctivitis, herpes simplex kerato conjunctivitis, herpes zoster conjunctivitis, pox virus conjunctivitis, myxovirus conjunctivitis, paramyxovirus conjunctivitis, arbour virus conjunctivitis, epidemic keratoconjunctivitis (EKC), pharyngoconjunctival fever (PCF)and follicular conjunctivitis.

Trachoma or keratoconjunctivitis

Trachoma (previously known as *Egyptian ophthalmia*) is a chronic kerato-conjunctivitis, primarily affecting the superficial epithelium of conjunctiva and cornea simultaneously. It is characterised by a mixed follicular and papillary response of conjunctival tissue. It is still one of the leading causes of preventable blindness in the world. Trachoma is caused by a bedsonian organism, the Chlamydia trachomatis belonging to the Psittacosis-lymphogranuloma trachoma (PLT) group. The organism is epitheliotropic and produces intra cytoplasmic inclusion bodies called Halberstaedter Prowazeke bodies. The symptoms include minimal and mild foreign body sensation in the eyes, occasional lacrimation, slight stickiness of the lids and scanty mucoid discharge in the absence of secondary infection. In the presence of secondary infection, a typical symptom of acute mucopurulent conjunctivitis develops [11].

Treatment for eye infections

Antibiotics

These are generally used to treat, or to prevent a bacterial eye infection. It is most effective against certain bacteria, and sometimes an infection that cannot be cured with one medication may be eliminated by another. The most common antibiotics used are gentamicin, sulfacetamide, erythromycin, ciprofloxacin, tobramycin and ofloxacin [12].

Traditional plants used in Ocular diseases

In medical system, it is a challenge to manage an eye disorders without any side effects by chemical drugs. But now –a-days it is little successful with the help of the herbal medicines. Therefore; efforts have been made to identify new medicinal plants from different sources because of their effectiveness, few side effects and low cost. Approximately in the world 200 plants have been identified to support the treatment for eye disorders and several plant species have been listed in Traditional Indian Medicine for their ophthalmic effects.

In the Ayurvedic system of medicine, ancient Indian books like CharakSamhita, SushrutSamhita, RasTarang, Bhavprakasha, NayanDrastam and Astanghriday, there are a number of plants which are used in ophthalmic disorders, either single or in compound formulations. In Ayurveda (Indian system of medicine) various eye disorders and diseases like Abhishyand (Conjunctivitis), Adhimanth (Glaucoma), Timir (Cataract), etc. have been described in great details. Their etiology and treatments have also been described. There are some reports which explains the medicinal plants used in the treatment for ocular disorders. Some reviews are recorded as common name, scientific name, family, part used and reference of plants used in the treatment of eye diseases.

Traditional plants used as treatment for conjunctivitis

S. no.	Scientific name/ Common name	Family	Part used	References
1.	*Abelmoschus esculentus* (L.)/ Okra	Malvaceae	Fruit, flower	Bevans *et al.*,2001[13]
2	*Acacia arabica (Lam.) Willd*/ Babul	Mimosaceae	Bark	Jain *et al.*, 2010[14]
3	*Acacia macracanthaHumb.&Bonpl. ex Willd.*/ Faique	Mimosaceae	Bark	Tene *et al.*, 2007[15]
4	*Albizia lebbeck (L.) Willd*/ Woman's tongues Tree	Mimosaceae	Leaf, Bark	Venkata *et al.*, 2010[16]
5	*Annickia chlorantha (Oliv.) Setten*& Maas/ African whitewood	Annonaceae	Bark	Ndenecho, 2009[17]
6	*Boerhavia diffusa L.*/ Atukamamidi	Nyctaginaceae	Leaf, root	Venugopal, 2002[18]
7	*Borago officinalis L.*/ Borraja	Boraginaceae	Leaf, flower	Tene *et al.*, 2007[15]
8	*Camellia sinensis (L.) Kuntze*/ Green tea	Commelinaceae	Inflorescences	Klauss, V., Adala, 1994[2]
9	*Commelina erecta L.*/ slender dayf-lower	Commelinaceae	Inflorescences	Agra *et al.*, 2007[19]
10	*Dissotis rotundifolia* (SM) Triana/ Dissotis	Melastomataceae	Leaf	Okeri *et al.*, 2006[20]
11	*Flacourtia indica* (Burm.f.) Merr./ Rakatsonk	Flacourtiaceae	Leaf	Nag *et al.*, 2007[21]
12	*Foeniculum vulgare* Mill./ Fennel	Apiaceae	Leaf, flower	Tene *et al.*, 2007[15]
13	*Fumaria officinalis L.*/ Paptra	Fumariaceae	Leaf, stem, flower	Ahmad *et al.*, 2009[22]
14	*Heliotropium indicum L.*/ Hatisuri	Boraginaceae	Leaf, root	Rahmatullah *et al.*, 2009[23]
15	*Iris germanica L.*/ Lirio	Iridaceae	Flower	Tene *et al.*, 2007[15]
16	*Juniperus procera Hochst. exEndl.* / African Juniper	Cupressaceae	Sap	Klauss, V., Adala, 1994[2]
17	*Kalanchoe densiflora Rolfe*/ Air Plant	Crassulaceae	Leaf	Klauss, V., Adala, 1994[2]
18	*Lophiratanceolata Van Tiegh ex Keay*/ Red iron wood	Ochnaceae	Leaf	Pieboji *et al.*, 2004[24]
19	*Mimosa pudica Linn*/ Chuimui	Mimosae	Leaf	Sharma *et al.*, 2001[25]
20	*Ocimum gratissimum L.*/ *Alfavaca*	Lamiaceae	Leaf	Rahmatullah *et al.*, 2009[23]
21	*Psidium guajava Linn.*/ Guava	Myrtaceae	Flower	Mittal *et al.*, 2010[26]
22	*Rosa centifolia L.*/ Rosa de Castilla	Rosaceae	Flower	Tene *et al.*, 2007[15]
23	*Scoparia dulcis Linn.*/ Phanism	Scrophulariaceae	Flower	Greeshma *et al.*, 2006[27]
24	*Thespesia populnea (L.) Corr.*/ In-dian Tulip tree flower	Malvaceae	Fruit,	Acharya, *et al.*, 2010[28]
25	*Xanthium indicum Koenig*/ Gokharu	Asteraceae	Leaf	Nag *et al.*, 2007[21]

Conclusion

Ayurveda is one of the traditional treatments for healthylife and longevity. A wide variety of herbs are available for conjunctivitis. In this review the information is provided as common name, scientific name, family, part used & reference of the plants used in treatment of conjunctivitis. This review may help the researcher to develop new formulations for conjunctivitis and ocular diseases which are beneficial for the society in future.

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