

NATURAL PHARMACONS IN THE TREATMENT OF ORAL MUCOSAL LESIONS

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Article Received on
28 Aug 2015,

Revised on 21 Sep 2015,
Accepted on 15 Oct 2015

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ABSTRACT

Ancient medicine utilized herbs, widely for their medicinal and therapeutic benefits. Herbs have become important in the global context today because they offer solutions to the multiple concerns faced by mankind. Herbal extracts proved to be effective because they interact with special chemical receptors within the body. However, as part of human evolutionary process these herbal medications have been replaced with allopathic preparations. In recent years due to widespread and indiscriminate use of antimicrobial and antifungal drugs, many organisms have acquired resistance with apparent side effects. Hence off late resurgence towards herbal medications is on the rise. The following manuscript throws light on the various natural

remedies available for the treatment of oral mucosal lesions.

KEYWORDS: Herbs; oral cavity; mucosa; management; cure.

INTRODUCTION

Herbs are plants that lack woody nature which is the characteristic of trees or shrubs. They are used as medicines, as flavoring agents and for their aroma. Along with herbs, traditional plants with woody tissue are also used for medicinal purpose. The extracts obtained from leaves, bark, root with medicinal purposes are useful & effective in treatment of various diseases. Some of the natural plant extracts are known for their anti-inflammatory, antibacterial, anti-fungal & anti-cancer properties. They are also used for purification of blood and reduce irritation of the tissues. They are available as pills, syrups, dried leaves or bark, ointment, oil forms. They can be applied topically and also can be taken orally. These herbal extracts can be used for long term treatment with lesser side effects. The following are the few very commonly used plants in the treatment of oral mucosal lesions.

Aloe-Vera

Aloe Vera- aloe was derived from the Arabic word “alloeh” meaning shiny and bitter, vera from the Latin word which means true or genuine.^[1] Commonly known as first aid plant because of its rejuvenating, healing or soothing properties. Aloe-Vera has vitamins, enzymes, minerals, amino acids, salicylic acids. It has anti-cancer, anti-inflammatory, anti-oxidant, anti-bacterial, anti-fungal, anti-viral, chemo-therapeutic, radio-protective properties. Because of all these properties aloe-vera is used to treat aphthous stomatitis, canker sores, oral lichen planus, oral submucous fibrosis, oral leukoplakia, herpes simplex infections, herpes zoster, oral candidiasis, benign pemphigus, geographic tongue, burning mouth syndrome, angular cheilitis, denture stomatitis and radiation induced mucositis.^[1,2,3] It is available in juice, gel and in ointment forms.

Lycopene

It is a bright red carotene with carotenoid pigment and phytochemical which is found in fruit and vegetables such as tomatoes, apricots, papaya, watermelon, carrots and other yellow fruits. It prevents carcinogenesis and atherogenesis by protecting critical cellular biomolecules, including lipids, lipoproteins, proteins and DNA. It is the most efficient biological anti-oxidizing agent. Because of its anti-cancer and anti-oxidant properties lycopene is used in treatment of oral submucous fibrosis, oral leukoplakia, oral lichen planus and oral cancer.^[4,5] It is available in powder, oil, capsules and tablet forms.

Turmeric

It is a rhizome of *Curcuma longa*, a flavourful yellow orange spice belonging to the family Zingiberaceae.^[6] It is a traditional medicine used from the ancient times as a dye, flavoring agent, for therapeutic and cosmetics. It is used in both Ayurvedic and Unani medications and the main ingredients are named curcuminoids, which include mainly curcumin (diferuloyl methane), demethoxycurcumin, and bisdemethoxycurcumin.^[6] It has anti-inflammatory, anti-oxidant, anti-microbial, neuro-protective, cardio-protective, thrombo-suppressive and anti-diabetic actions.^[7,8] Curcumin has a potent antitumor activity, it induce apoptosis and inhibits cell growth of the malignant cells. It is also associated with downregulation of notch-1, nuclear factor b (NF-b), and expression of cyclooxygenase-2 (COX2), lipoxygenase (LOX), iNOS (inducible nitric oxide synthase), matrix metalloproteinase (MMP-9), tumor necrosis factor (TNF), chemokines and cyclin D1.^[9] It is available in powder, oil forms and used topically in treatment of oral lichen planus and oral submucous fibrosis.^[7,8] Curcumin inhibits the prostaglandin and leukotrienes and also has scavenging effect on superoxide radicals, hydroxyl radicals and lipid peroxidation. Furthermore, curcumin has been found to have fibrinolytic action and thus inhibits collagen synthesis.^[6]

Neem

Also known as *Azadirachta indica*, an Indian lilac and belongs to the family Meliaceae. It is used in Ayurvedic and Chinese traditional medicine from the ancient times. Every part of neem has got medicinal properties. It has anti-bacterial, anti-fungal, anti-helminthic, anti-cancer, anti-inflammatory, neuroprotective properties. It is used in treatment of aphthous ulcers as mouthwashes. Neem leaf extract is postulated in curing oral malignancy.^[10] It is available in dried form and oil form (derived from fruits and seeds of neem tree).

Honey

Honey is a natural substance made by bees from nectar of flowers. It is used as a sweetener & flavoring agent. Along with these properties it also has some medicinal values. It has anti-bacterial, anti-microbial, anti-septic, anti-inflammatory, anti-oxidant properties, wound healing properties, and activates immune response. Because of these properties it is used in treatment of radiation induced oral mucositis and aphthous ulcers.^[11]

Coffee

Coffee made from coffee bean also has some medicinal properties. It contains caffeine which is a natural alkaloid. It has anti-inflammatory and anti-oxidant properties. Studies have

showed that coffee along with honey reduced chemotherapy induced mucositis.^[12] It is available in powder form.

Green tea

It is made from the leaves of *Camellia sinensis*. Green tea is originated in China and in recent times has become relatively widespread worldwide. It is known to be used in various dietary supplements, beverages and cosmetics. Green tea contains polyphenols, flavonoids, catechins, a variety of enzymes, amino acids, phytochemicals, sterols, minerals. Green tea contains four major polyphenols: epicatechin (ec), epigallocatechin (egc), epicatechin-3-gallate (ecg), epigallocatechin-3-gallate (egcg) which were found to inhibit a variety of processes associated with cancer cell growth. Hence has a potential role in treating oral cancer. It also has anti-oxidant, anti-inflammatory, anti-viral and anti-allergic properties.^[13] It is available in the form of dried leaves.

Nigella sativa

Nigella sativa is an annual flowering plant from the family Ranunculaceae. It is used as a spice. Commonly known as black seed, kalonji, black cumin and in Latin it was called Panacea meaning “cure all”. It is been used for medicinal purposes from ancient times. Both seeds and oil extracts are known for medicinal value. It has anti- cancer, anti-inflammatory, anti-oxidant, anti-mutagenic and anti-septic properties.^[14,15] It was found to be effective in relieving pain from aphthous ulcers.

Amla

Also known as Indian gooseberry, *Phyllanthu semblica* belongs to the family of *Phyllanthaceae*. It is credited with healing, nutritional and medicinal benefits thus taking a special place in Ayurveda. It is the richest source of vitamin c. It helps in cooling and digestion. Studies conducted on Amla suggested that it has anti-bacterial, anti-fungal, anti-viral, anti-oxidant properties. Bark of the root mixed with honey is applied to aphthous ulcers of the mouth and a decoction of the leaves is also useful as a mouth wash in the treatment of aphthae.^[16]

Rosemary

Also known as *Rosmarinus officinalis*, it is an aromatic plant which belongs to the member of mint family *Lamiaceae*. It is derived from Latin “dew of the sea”. The leaves are used as a flavoring agent and as perfume. It is known for its antibacterial, antifungal, antioxidant

properties as they contain phytochemicals. It is available in dried leaves and oil form. Studies have suggested that extracts and essential oils from flowers and leaves of rosemary can be used to treat diseases in folk medicine. It is also used to treat oral mucosal lesions like oral candidiasis.^[3]

Myrrh

Myrrh belongs to the genus *Commiphora*. It is well known for its fragrance and is used mostly as perfumes. Myrrh is a potent astringent, thus helps in soothing the inflamed tissues.^[3] It also has pain relieving actions thus helpful in relieving pain from aphthous ulcers and oral herpes.^[3,17] Available in dried leaves and oil form.

Chickweed

Commonly known as *Stella media*, chickenwort, winterweed. It belongs to the family *Caryophyllaceae*. It is used as a leafy vegetable. The plant has medicinal benefits such as anti-inflammatory properties thus helpful in soothing inflamed tissues.^[3]

Thyme

Also known as *thymus vulgaris*, winter thyme. It is an evergreen aromatic herb used for culinary, medicinal and ornamental purposes. The oil extracts from thyme has anti-fungal, anti-septic properties. It is helpful in treating oral candidiasis and oral herpes.^[3,17] it is available in dried leaves and oil form.

Violet

Violet also known as *viola* and *Clematis virginica* is a flowering plant belonging to the family *Violaceae*. It is used as flavoring agent, therapeutic agent and as a source of scent for perfumes. Violet has anti-inflammatory and anti-oxidant properties thus these mouthwashes aid in relieving inflammation associated with canker sores, cold sores and oral cancer.^[17]

Licorice root

Also known as *Radix glycyrrhiza* is a sweet flavoring root of *Glycyrrhizaglabra* belonging to the family *Fabaceae*. It is used in cosmetics, foods, tobacco, and in both traditional and herbal medicine. Licorice contains metabolites such as saponins, flavonoids, isoflavonoids, chalcones, and coumarins.^[18] It is used in treatment of oral candidiasis, aphthous ulcers and oral lichen planus.^[18,19] It is available in the form of capsules, tablets, liquid extracts.

Propolis

Propolis is a supplement extracted from bee wax. It is used as sealant for unwanted open spaces in the hives. It is collected from sap flow, tree bud by honey bees. It contains flavonoids along with antimicrobial, anti-oxidant, anti-inflammatory, anti-carcinogenic properties.^[3] It activates immune system. It is used in treating mouth ulcers.^[20] It is available in the form of tablets, creams, gels, mouth rinses.

Grape seed

Grapes are berries belonging to the genus *Vitis*. Grapes can be eaten raw or they can be used for making wine, jam, juice, jelly, grape seed extract, raisins, vinegar, and grape seed oil. There are different varieties of grapes available. Grapes along with their leaves and sap have been traditional treatments in Europe for thousands of years. Grape seed extract is derived from the ground-up seeds of red wine grapes. They are known to have antioxidant, chemopreventive and anticancer properties thus used in preventing oral cancer.^[21]

Pomegranate

Also known as *Punicagranatum* and belong to the family *Lytheraceae*. Pomegranate is used in culinary and medicinal purposes. It has antioxidant, anti-carcinogenic, and anti-inflammatory properties. Pomegranate known as a folk medicine is used as a treatment for many ailments. It is effective against candida associated denture stomatitis.^[22]

Capsaicin

Capsaicin is an active component of chilli peppers, which are plants belonging to the genus *capsicum*. Capsaicin is used as an analgesic in topical ointments. Because of its analgesic effect capsaicin is applied topically to relieve neuropathic pain. Thus capsaicin desensitizes stimuli caused due to thermal, chemical and mechanical agents. Studies have shown that capsaicin can be effective in patients with burning mouth syndrome.^[23]

Tormentillo

Potentilla tormentilla also known as tormentill is an herbaceous perennial plant belonging to the family *Rosaceae*. It is a potent astringent and used in treatment of oral lichen planus, in the form of tincture.^[19]

Apple cider

Apple cider vinegar, otherwise known as cider vinegar or ACV, is a type of vinegar made from cider or apple must. ACV is used in salad dressings, marinades, Vinaigrettes and food preservatives. In dentistry, ACV is used for treating oral thrush.

Triphala

Triphala, is a herbal product and as its name suggests it is made from equal proportions of Terminalia chebula, Terminalia belerica and Emblica officinalis. Triphala is considered to have excellent antioxidant and antimicrobial activity. Triphala extract has good antioxidant activity and anticarcinogenic property thus used in the treatment of cancers.^[17]

Spirulina

Spirulina is blue green algae with rich natural source of proteins, carotenoids and other micronutrients. It is used successfully in the treatment of leukoplakia and OSMF. The chemopreventive capacity to reverse precancerous lesions of spirulina is attributed to the antioxidant property with high amount of beta carotene and superoxide dismutase. Recently, it is observed that spirulina can exhibit anti viral properties. They are found to inhibit the replication of several enveloped viruses including Herpes simplex type I, human cytomegalovirus, measles and mumps virus, influenza A virus and human immunodeficiency virus-1 virus (HIV-1).^[24,25]

Mushrooms

Mushroom is a widely used food product. Recently, Purified bioactive compounds derived from medicinal mushrooms such as shiitake, maitake, reishi, and agaricus species are found to exhibit excellent mutagenic and anticancer activity. They act by improving the immune system by the presence of certain glucans and polysaccharide peptides (proteoglycans).

Garlic

Garlic is a natural bioactive element used generally for a number of diseases in ayurvedic medicine. The major ingredient of garlic is allicin which is Considering to have anti-inflammatory and immunomodulation properties. Allicin is found to effectively decrease the secretion of inflammatory products, migration of neutrophils and inhibit bacterium and viruses. They also antagonize oxidation and play a vital role in immunomodulation. A Study has shown that allicin can be an effective modality in controlling pain, promote ulcer healing and prevent the recurrence of recurrent aphthous stomatitis.^[26]

Essential oils***Oregano oil***

Origanum vulgare is a common species of *Origanum*, a genus of the mint family Lamiaceae. It has anti-fungal, anti-bacterial, anti-viral properties. It is used in treating oral candidiasis.^[27]

Olive oil

Olive oil is produced either by centrifugation or hydraulic pressing of malaxed olive drupes (pomace) harvested from the olive groves. Both olives and olive oil contain anti-microbial, lubrication, anti-inflammatory, antioxidants properties. It is used in treating xerostomia.^[28]

Sesame oil

Sesame plant (*Sesamum indicum*) of the Pedaliaceae family has been considered a gift of nature to mankind because of its nutritional qualities and its many desirable health effects. In India sesame seeds are commonly known as 'gingelly' or 'til' seeds. It contains antioxidants. It is used commonly for cracked lips.^[29]

Tea tree oil

Tea tree oil also known as *maleuca* oil. This oil in vitro has proved to be a potent agent for the prevention and treatment of oral fungal infections.^[30]

Coconut oil

The oil has small amounts of tocopherols, tocotrienols and phytosterols and is therefore (because of its constituents) known to have antiviral, antibacterial effects and excellent healing properties. It is used in the treatment of viral and fungal infections of the oral cavity. The silky sensation of coconut oil can be an effective agent, when it comes to aphthous/stress ulcers in mouth.

Satureja oil

Satureja hortensis is an aromatic plant that belongs to the family of Lamiaceae. It is used as a flavoring agent. Various species of the *Satureja* have both culinary and medicinal purposes. The pharmacological actions of *S. hortensis* comprises of anti-nociceptive, anti-inflammatory, antifungal and antimicrobial activities. *Satureja* oil applied topically can be considered as an effective treatment for denture stomatitis.^[31]

CONCLUSION

Since historic times, Ancient traditional medicines have been seen with an eye of speculation for their therapeutic properties. For the past decade there has been increase in the awareness and knowledge regarding folk medicine globally for the reason that they encompass antimicrobial, antioxidant, anti-fungal, anti-viral, anti-inflammatory and anti-carcinogenic properties. This appraisal is an attempt in bringing to light some of the herbs which hold a promising future in treating oral mucosal lesions. These herbs are not stand alone managements but can be used as a viable substitute. More clinical trials need to be conceded for standardization of these natural merchandises to identify their efficiencies.

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