Herbal therapy in Oral Submucous Fibrosis: A Short Review

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Abstract

Oral submucous fibrosis (OSMF) is a potentially malignant disorder causing significant mortality and morbidity. It is a chronic insidious disease, which progressively causes reduced mouth opening, stiffness of oral mucosa and inability to eat. Treatment of this condition is difficult as various modalities have been used, but with its own limitations and inefficiency. Reversing the fibrosis and improving the mouth opening remains the most challenging part of the management. In recent years, various studies have been conducted on usage of alternative modalities for the management of OSMF. These include several herbal products like aloevera, turmeric, spirulina, Oxitard, Tulsi, nigella sativa, turmeric with black pepper and many others.

The objective of this article is to review various herbal agents that has been used in the treatment of OSMF.

Key words: Oral submucous fibrosis, Alternative therapy, Areca nut, Betel nut, Turmeric.

Introduction

Oral submucous fibrosis (OSMF) is a potentially malignant disorder caused due to adverse habit of betel or areca nut chewing, a habit that is prevalent in South Asian populations but has been recognized in Europe and North America these days.1 Initially patients presents with inflammation followed by hypovascularity and fibrosis visible as blanching of the oral mucosa with a marble-like appearance. In advanced stages, restriction of mouth opening leading to difficulty in speech, mastication, and swallowing. This leads to significant morbidity, later may progress into squamous cell carcinoma causing mortality.2

It is a progressive and irreversible disease; whose management seems to be a challenging entity. Numerous medical therapies, natural plant extracts and surgical approaches have been tried on OSMF, but there is no definitive and widely accepted treatment currently available. Therefore, there is a continuous search for effective treatment modality that can combat this chronic disease. The objective of this article is to review various herbal agents that have been used in the treatment of OSMF.

Methods of Literature Search

Scholarly search bibliographic databases (PubMed, PubMed Central, Medline Plus, Medknow) and other search engines like Google, Google scholar were explored with key words “OSMF”, “treatment” “herbal” and “alternative modality” “turmeric and OSMF”, “aloevera and OSMF” etc. Total of twenty-five articles
that were published in English language were obtained and reviewed.

Results and Discussion

In recent years, various studies have been conducted on usage of alternative modalities for the management of OSMF including aloevera, turmeric, spirulina, Oxitard, Tulsi, nigella sativa, turmeric with black pepper, Madhupippalyadi Yoga, Kavala (gargling), with Ksheerabala Taila. These products are natural, and used by different cultures as treatment modality since ancient times for different diseases affecting the body. Polyphenols are the most commonly used natural product from herbs used for treatment modality because of its anti-oxidant effect.3

Aloevera

Gel of the leaves of plant Aloevera is a polysaccharide which promotes wound healing. It is known to have anti-inflammatory, immunomodulatory, and antioxidant properties. Sterols present in aloevera gel is a potent inhibitor of inflammation and found easily in India and is of low cost.4

Alam S et al found significant improvement in most symptoms of OSMF compared with both the medicinal and surgical treatment modality in a double-blind, placebo-controlled, parallel-group randomized controlled trial that was conducted on 60 subjects with OSMF.5 Similarly, Singh N et al found that Aloevera along with physiotherapy exercises reduces burning sensation and improves mouth opening, tongue protrusion and cheek flexibility in comparison with antioxidants. Hence along with habit restriction, aloevera can be considered as an effective, simple and safe mode of treatment in OSMF because of its soothing and analgesic effects.6

Anuradha A et al used systemic (juice) and topical aloevera (gel) for 3 months on OSMF patients and assessed for mouth opening, cheek flexibility, and tongue protrusion at different intervals, and found that clinical response to aloevera was comparable to that of intralesional injections of hydrocortisone and hyaluronidase with antioxidant supplementation.7 However, Patil S found Lycopene to be more efficacious and reliable treatment modality in OSMF in terms of improving mouth opening and tongue protrusion as compared to aloevera.8

Turmeric

Turmeric (Curcuma longa) is a medicinal plant and has wide therapeutic actions such as anti-inflammatory, antioxidant and anticancer properties. Curcumin is the principal ingredient comprising 2-5% of turmeric and possess fibrinolytic action. Turmeric also inhibits lipid peroxidation by scavenging superoxide radicals, hydroxyl radicals and reduces collagen synthesis. Curcumin inhibits NF-kB activation, blocks the IK-mediated phosphorylation and degradation of IBAa, thus offering anti-inflammatory action.9

Various studies like that of by Agarwal N et al, Deepa DA et al. Yadav M et al., Balwant Rai et al, have been conducted to show the efficacy of curcumin in treating the OSMF patients. These studies have shown to that curcumin reduces burning sensation, improves mouth opening and tongue protrusion.9-12 Zhang SS et al., found that curcumin decreases the expression levels of type I and III collagen.13 Hazarey VK et al conducted a study to determine the efficacy of curcumin in the treatment of OSF on thirty clinically diagnosed OSF patients and divided into two groups, 15 patients in each group receiving Longvida (curcumin) lozenges and Tenovate ointment (clobetasol propionate (0.05%) respectively along with physiotherapy exercises. They concluded that curcumin is a promising agent in the management of OSMF, however combination strategies including the stoppage of causative ill habits, appropriate medicinal and physiotherapy management is more efficient than single therapeutic modality.14

Agarwal N et al studied treatment efficacy of turmeric in terms of burning sensation on and mouth opening, on 30 subjects diagnosed with OSMF. Although there was no significant improvement in mouth opening, the change in burning sensation on VAS was significant.9

Spirulina

Spirulina is a blue green microalgae and was used to test the clinical activity in reversing the oral precancerous lesions like leukoplakia. Spirulina, has a chemo preventive capacity, thus it has ability to reverse precancerous lesions. It also has high antioxidant
property and contains high amount of beta carotene, phenolic acid, tocopherols and superoxide dismutase. Mulk BS conducted a study to assess the efficacy of spirulina and pentoxyfilline in the treatment of oral submucous fibrosis on forty patients and divided into two groups with 20 in each group. Group I received Pentoxyfilline and Group II Spirulina for period of 3 months. Both Pentoxyfilline and Spirulina groups showed statistically significant results (p=0.000) in all the three parameters (mouth opening, burning sensation and tongue protrusion). Side effects were less common in Spirulina group in contrast to pentoxyfilline group. They concluded that spirulina proved to be superior than pentoxyfilline as no side effects were observed and it was superior in reducing burning sensation. Patil S et al evaluated efficacy of spirulina and aloe vera in the management of OSMF on 42 subjects. Patients who were administered Spirulina showed significant clinical improvement in mouth opening and ulcers/erosions/vesicles (p < 0.05). However, there was no significant improvement in burning sensation (p ¼ 0.06) and pain associated with the lesion (p ¼ 0.04) among both the groups. They concluded that spirulina appears to be more promising when compared to aloevera for the treatment of OSMF.

Shetty P et al evaluated the efficacy of spirulina as an antioxidant adjuvant to corticosteroid injections in 40 OSMF patients of south Karnataka and North Kerala and found that Spirulina can bring about clinical improvements in OSF patients and can be used as an adjuvant therapy in the initial management of OSF patients.

Oxitard

Oxitard is a herbal antioxidant formulation containing extracts of various products like Mangifera indica, Withania somnifera, Daucus carota, Glycyrrhiza glabra, Vitis vinifera, powders of Emblica officinalis and Yashada bhasma; and oils of Triticum sativum. Mangifera indica.

Patil S et al compared the efficacy of oxitard and aloe vera in the management of OSMF on 120 subjects with OSMF and found that clinical improvements (mouth opening and tongue protrusion) and subjective symptoms improvement (pain and difficulty in swallowing) was significant in the oxitard group. They concluded that oxitard capsules can bring about significant clinical improvements than aloe vera gel in the treatment of OSMF. Although, oxitard capsules bring about significant clinical improvements, it does not effect changes in the size of the lesion, thus Patil S et al recommended studies with larger sample size, with longer period of treatment and follow-up.

Tulsi

Tulsi (basil or Ocimum sanctum Linn) enhances immunity and metabolic functions and helps in reducing inflammation by inhibiting the inflammation-causing enzymes. Tulsi is also known to have antioxidant property and decreases stress level. A pentacyclic triterpene acid, known as ursolic acid derivative from Ocimum sanctum Linn suppresses NF-κB activation, degradation and phosphorylation of IκBα, IκB-kinase activation, p65 phosphorylation, p65 nuclear translocation and NF-κB-dependent reporter gene expression.

Srivastava A et al conducted a study to investigate clinical efficacy of 1 gm tulsi and 1 gm turmeric mixed in glycerine base in forty-one patients with OSMF. There was an early, sustained and significant fall in burning sensation due to synergistic effects of these two medications, and statistically significant improvement in mouth opening. Thus, they concluded that, along with the life style modification, tulsi and turmeric provided safe, low cost and efficacious treatment modality in all grades of OSMF in all age groups with no limitation to its use.

Nigella sativa

Nigella sativa (Family Ranunculaceae) is a medicinal plant used in various traditional systems of medicine like Unani, Ayurveda and Siddha. It is commonly known as black seed and is native to Southern Europe, North Africa and Southwest Asia. Extensive studies have shown that nigella sativa processes a wide spectrum of its pharmacological actions which may include antioxidant properties, anti-inflammatory, anticarcinogenic property, immunomodulatory and antifibrinolytic properties. Most of these therapeutic actions of nigella sativa has been attributed to presence
of bioactive component thymoquinone. Pipalia PR et al investigated effectiveness of turmeric with black pepper and nigella sativa on 40 OSMF patients and estimated superoxide dismutase levels before and after the treatment which revealed improved mouth opening, reduction in burning sensation, and SOD levels.

**Conclusion**

Although herbal products showed some promising results, the studies conducted using them are very few to conclude whether they have a major beneficiary effect in the treatment of OSMF. In comparative trials, these products found to have same efficacy or slightly lower or higher efficacy as compared to conventional modalities. Furthermore, most of the studies that were reviewed in this article, recommended further studies with large sample size using these agents as treatment modality for OSMF. However, these modalities may be used as adjuvant treatment modalities to enhance the therapeutic effects of other treatment strategies.

**Ethical Clearance**- Taken from Vydehi Institute of Dental Sciences and Research Center, Bangalore

**Source of Funding**- Self.

**Conflict of Interest**- Nil

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