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Assessing the efficacy of Oxitard capsules in the management of Oral Submucous Fibrosis

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ABSTRACT

Oral Submucous Fibrosis is a chronic debilitating disorder affecting the oral cavity, pharynx and the upper digestive tract. The present research assesses the role of Oxitard capsules in the management of Oral Submucous Fibrosis considering various parameters like improvement in mouth opening, tongue protrusion, cheek flexibility and reduction in burning sensation in the oral cavity on 30 patients who attended the Outpatient Department of Dr. D. Y Patil Dental College and Hospital, Pimpri, Pune-18. The study concluded that the administration of Oxitard capsules showed improvement in mouth opening, tongue protrusion, cheek flexibility and decrease in the burning sensation in the oral cavity.

Keywords: Oral Submuocus Fibrosis, Oxitard Capsules, Antioxidants

INTRODUCTION

Oral Submucous Fibrosis is defined as an insidious, chronic disease which affects any part of the oral cavity and sometimes the pharynx[1] and is occasionally preceded by and/or associated with vesicle formation[2] and is always associated with a juxta-epithelial inflammatory reaction which is followed by progressive hyalinization of the lamina propria[3] leading to stiffness of the oral mucosa and deeper tissues with progressive limitation in opening of the mouth and protrusion of the tongue leading to difficulty in eating, swallowing and phonation.[4]

It is a precancerous condition seen most commonly in the Indian sub-continent and has a reported incidence of between 0.2–1.2% of the urban population who attend the dental clinic and the condition shows a female:male predilection of 3:1 and characteristically first presents in adulthood between the ages of 45–54 years.[5]

The etiology is multifactorial origin for this condition and the various hypothesis implicated include the role of local irritants such as capsaicin[6], tobacco[7], areca nut[8-12], pungent and spicy foods[13], and alcohol[14], iron and vitamin B-complex deficiency, anaemia[15], and a genetic predisposition to the disease[12].

There are different treatment modalities for this condition, here one such treatment modality in the form of administration of antioxidants in the form of Oxitard capsules was carried out on 30 patients who attended the Outpatient.

Aim of the study: To assess the efficacy of Oxitard capsules in the management of patients with Oral Submucous Fibrosis.

Materials and Methods:

Source of data:

Thirty (30) adult patients who enrolled with signs and symptoms of OSMF were included in the study. Following parameters were included in the establishment of diagnosis and these 2 parameters were satisfied for inclusion in the study. A. Positive history of chewing of areca nut or one of its commercial preparations, difficulty in chewing and swallowing, and having burning sensation on eating spicy food. B. Restricted mouth opening and changes in oral mucosa including presence of palpable vertical fibrous bands, stiffness and blanching.

Following establishment of diagnosis, each patient was informed about the condition, its precancerous potential and advised to discontinue use of areca nut in all forms. A detailed case history including habit of history with details of duration, in years, frequency of chews per day was taken. All patients underwent oral prophylaxis to remove extrinsic stains, in order to motivate the patient towards recovery and to inform the investigator if patient resumes habit. Each patient was screened for diagnosis and inclusion, examined on three occasions, day 1 which is the first day of starting treatment, day 30, day 60, day 90 which is the fourth and last day of evaluation. Each patient was administered Oxitard capsules, 2 capsules twice a day for 60 days.

Method of data collection

Patients were evaluated for the following criteria

1. Mouth opening based on interincisal separation: Distance between the upper and lower central incisors when maximally extended with mouth wide open. Normal values: Males-35-45 mm. Females-30-42 mm.

Figure 1

2. Tongue protrusion: measured on the distance from the mesial incisal edge of central incisor to the tip of the protruded tongue. Normal values: Males-5-6 cms. Females-4.5-5.5 cms.

Figure 2

3.Cheek flexibility based on the distance between specified points on the cheek skin, V1 and V2, in normal position and with cheeks blown out. CF=V1-V2 where V2=is marked at one third the distance from the angle of

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the mouth on a line joining the tragus of the ear and the angle of the mouth. V1=the subject is then asked to blow his cheeks fully and the distance measured between the two points is marked on the cheek. Mean value for Males-1.2 cms, Females-1.08 cms

Figure 3, 4(V2) and 5(V1)

4. Burning sensation present or not and if so, degree to be determined by use of a Verbal Analogue Scale.(VAS)

Inclusion Criteria:

Patients suffering from chronic oral mucous fibrosis lesions characterized by burning sensations in the mouth, particularly while taking hot and spicy foods. Adult patients of either sex aged between 18-50 years were included. Patients who had not participated in a similar investigation in past four weeks. Patient willing to give a written informed consent and follow the schedule.

Exclusion criteria:

Patients suffering from severe systemic disorders pertaining to cardiac, respiratory, central nervous system, renal or hepatic disorders. Patient who have participated in a similar clinical investigation in the past four weeks. Patient who has used a similar product in the past four weeks. Patients who refused to sign informed consent. Patients having a known history or present condition of allergic response to similar pharmaceutical products, pre-existing systemic disease necessitating long-term medications and pregnant and lactating women were excluded from the study.

Method of data analysis

Results were analyzed statistically by means of a paired t-test analysis.

Results:

TABLE NO.1: DISTRIBUTION OF MEAN AND SD VALUES OF MOUTH OPENING (MM) AT DAY 0, AT DAY 30, AT DAY 60 AND AT DAY 90:

Duration	Mouth Opening(mm) (n=30)	Student's Paired 't' test value	'p' value	Significance
	Mean ± SD			
Day 0	28.19±7.80	50.11	p<0.01	Highly significant
Day 30	29.23±7.86			
Day 60	30.04±8.02			
Day 90	30.66±8.07			

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By applying Student's Paired 't' test there is a highly significant increase in mean mouth opening (mm) from starting treatment i.e. day 0 to last day of evaluation i.e. day 90 ($p<0.01$). The average increase is 2.46 mm±1.08 mm.

TABLE NO.2: DISTRIBUTION OF MEAN AND SD VALUES OF TONGUE PROTRUSION (MM) AT DAY 0, AT DAY 30, AT DAY 60 AND AT DAY 90:

Duration	Tongue Protrusion(mm) (n=30)	Student's Paired 't' test value	'p' value	Significance
	Mean ± SD			
Day 0	38.31±9.06	569.72	p<0.01	Highly significant
Day 30	38.62±11.10			
Day 60	40.65±9.04			
Day 90	41.43±9.09			

By applying Student's Paired 't' test there is a highly significant increase in mean Tongue Protrusion(mm) from starting treatment i.e. day 0 to last day of evaluation i.e. day 90 ($p<0.01$). The average increase is 3.11 mm±0.921 mm.

TABLE NO.3: DISTRIBUTION OF MEAN AND SD VALUES OF CHEEK FLEXIBILITY (MM) AT DAY 0, AT DAY 30, AT DAY 60 AND AT DAY 90:

Duration	Cheek Flexibility(mm) (n=30)	Student's Paired 't' test value	'p' value	Significance
	Mean ± SD			
Day 0	42.44±3.75	93.13	p<0.01	Highly significant
Day 30	43.69±3.58			
Day 60	44.72±3.79			
Day 90	45.67±3.94			

By applying Student's Paired 't' test there is a highly significant increase in mean **Cheek Flexibility(mm)** from starting treatment i.e. day 0 to last day of evaluation i.e. day 90 ($p<0.01$). The average increase is 2.97 mm±0.96 mm.

TABLE NO.4: DISTRIBUTION OF MEAN AND SD VALUES OF BURNING SENSATION (VAS) AT DAY 0, AT DAY 30, AT DAY 60 AND AT DAY 90:

Duration	Burning Sensation (VAS) (n=30)	Student's Paired 't' test value	'p' value	Significance
	Mean ± SD			
Day 0	2.97±0.96	73.26	p<0.01	Highly significant
Day 30	2.77±0.93			
Day 60	2.27±0.90			
Day 90	2.03±0.88			

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By applying Student's Paired 't' test there is a highly significant decrease in mean **Burning Sensation (VAS)** from starting treatment i.e. day 0 to last day of evaluation i.e. day 90 ($p<0.01$). The average decrease is 0.94 mm±0.02 mm.

TABLE NO.5: PERCENTAGE INCREASE* / DECREASE FROM STARTING TREATMENT (DAY 0) TO LAST DAY OF EVALUATION (DAY 90) OF ALL PARAMETERS:**

Mouth Opening(mm) (n=30)	Tongue Protrusion(mm) (n=30)	Cheek Flexibility(mm) (n=30)	Burning Sensation (VAS) (n=30)
% increase*/decrease**from starting treatment (Day 0) to last day of evaluation (Day 90)			
8.05%* ↑	7.18%* ↑	7.07%* ↑	31.54%** ↓

Thus it is seen that there is increase by 8.05% in mouth opening, 7.18% increase in tongue protrusion, 7.07% increase in cheek flexibility and 31.54% decrease in burning sensation from starting treatment (day 0) to last day of evaluation (day 90). Thus it is concluded that mouth opening showed highest increase, followed by tongue protrusion, and cheek flexibility from starting treatment (day 0) to last day of evaluation (day 90). Burning sensation showed a significant decrease from starting treatment (day 0) to last day of evaluation (day 90).

Discussion:

Oral submucous fibrosis is a precancerous condition affecting the buccal mucosa of the oral cavity most commonly leading to marked rigidity and inability to eat[16,17] however any part of the oral cavity may be involved including the pharynx[18] eventually leading to decrease in mouth opening.

Malignant transformation rate of OSMF is as high as 7.6% in a study conducted in the Indian subcontinent over a 17 year period.[19]Treatment options include initially stoppage of habit followed by avoidance of spicy food and ingestion of chillies followed by intralesional steroid injections, placental extracts, pentoxyfylline, lycopene, surgical excision and laser therapy[17] can be used to a greater effect in reducing the signs and symptoms of OSMF.

The antioxidant property of a particular food/drug is based on the ability of that particular drug to neutralize free radicals by means of a process known as oxygen radical absorbance capacity (ORAC). The ORAC score is directly proportional to the ability of the substance neutralizing free radicals. Oxitard, a phytopharmaceutical formulation from The Himalaya Drug Company, possesses ORAC value which is equivalent to vitamin C. Oxitard Capsules neutralizes the free radicals effectively and maintains the right REDOX balance by reducing the oxidative stress hence can be implicated as a treatment modality in coronary artery disease, diabetes mellitus, dermatosis, oral submucous fibrosis, and postoperative recovery.[20]

*Formulation of Oxitard Capsules which has been obtained from the pamplet which is part of the drug package.

Each Oxitard capsule contains

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Extracts	Mangifera Indica Withania Somnifera Daucus Carota Glycyrrhiza Glabra Vitis Vinifera	94 mg 71 mg 47 mg 29 mg 12 mg
Powders	Emblica Officinalis Syzygium Aromaticum Yashada Bhasma	141 mg 29 mg 2.5 mg
Oil	Triticum Sativum	6.5 mg

Phytochemical studies of different parts of Mangifera Indica also known as mango, aam have shown the presence of phenol constituents, triterpenes, flavonoids, phytosterols, and polyphenols show potent anti-oxidant properties.[21]

Withania Somnifera (Ashwagandha) known as Indian ginseng act as radical scavenger due to their hydroxyl groups. Also the flavonoids present with a scavenging or chelating process demonstrating its antioxidant properties[22] alongwith the other properties like anxiolytic, adaptogen, memory enhancing, antiparkinsonian, antivenom, antiinflammatory, antitumor properties.[23]

Phenolic compounds present in Daucus Carota commonly known as carrot act as powerful chain breaking antioxidants and their radical scavenging properties is due to the presence of the hydroxyl groups and their ability to scavenge radicals like hydroxyl, superoxide and peroxyl.[24]

Roots of Glycyrrhiza Glabra Linn (Yashtimadhu), also known as licorice and sweetwood, show demulcent, antacid, anti-ulcer, anti-inflammatory, expectorant, tonic, diuretic, laxative and sedative properties along with antipyretic, antimicrobial, antiherpes and anxiolytic properties.[25]

Vitis Vinifera also known as (Common Grape Vine) contains various phenolic compounds such as caffeic, chlorogenic, o-coumaric, p-coumaric, ferulic, ciringic, vanillic, quercetin, and rutin acids which show significant antioxidant properties.[26]

Emblica Officinalis (amla) contains ellagic acid, quercetin, kaempferol, emblicanin, flavonoids, glycosides, proantocyanidins act as powerful antioxidants.[27]

Buds of Syzygium Aromaticum ie clove buds and the isolated flavonoidspresent in it show effective activity as hydrogen donors and act as primary antioxidants by reacting with lipid radicals.[28]

Yashada (zinc) is known to enhance endogenous antioxidant defense mechanism against free radicals.[29]

Phenolic compounds of Wheat (Triticum Aestivum L./Sativum) is mainly responsible for the antioxidant activity by reversing the effect of ROS mechanism.[30] Also during germination, the various vitamins, minerals, and phenolic compounds including flavonoids get synthesized in wheat sprouts, and these wheat sprouts reach the maximum antioxidant potential.[31]

Summary and Conclusion:

In this study the efficacy of Oxitard capsules was evaluated in 30 OSMF patients. Oxitard capsules due to its special antioxidant properties were found to be effective in the improvement of signs and symptoms of Oral Submucous Fibrosis. Oxitard capsules were effective in reducing the objectives signs of OSMF thereby improving the mouth opening (percentage of which was 8.05%), improving the tongue protrusion (percentage of which was 7.18%), improving the cheek flexibility (percentage of which was 7.07%) and decreasing the burning sensation (percentage of

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which was 31.54%). Thus, it can be concluded that Oxitard capsules appears to be a very promising drug in the improvement of the symptoms and management of Oral Submucous Fibrosis.

References:

1. Lemmer J, Shear M. Oral submucous fibrosis: a possible case in a person of Caucasian descent. Br. dent. j., 1967, 122: 343-346.
2. Pindborg JJ, Singh B. Formation of vesicles in oral submucous fibrosis. Acta path. microbiol. scand., 1964, 62: 562-566.
3. Sirsat SM, Pindborg JJ. Subepithelial changes in oral submucous fibrosis. Acta path. microbiol.scand., 1967, 70: 161-173.
4. Wahi PN et al. Submucous fibrosis of the oral cavity: histomorphological studies. Br. j. cancer, 1966, 20: 676-687.
5. Jayanthi V, Probert C S J, Sher K S, Mayberry J F. Oral Submucous Fibrosis: a preventable disease. *GUT* 1992; **33**: 4-6.
6. Sirsat SM, Khanolkar VR. Submucous fibrosis of the palate in diet pre-conditioned wistar rats: induction by local painting of capsaicin-optical and electron microscope study. Arch. pathol., 1960, 70: 171-179.
7. Paymaster JC. Cancer of the buccal mucosa: a clinical study of 650 cases in Indian patients. Cancer, 1956, 9: 431-435.
8. Pindborg JJ. Oral submucous fibrosis: a review. Ann. Acad. Med. Sing., 1989, 18: 603-607.
9. Shiau YY, Kwan HW. Submucous fibrosis in Taiwan. Oral surg. oral med. oral pathol., 1979, 47: 453-457.
10. Canniff JP, Harvey W. The aetiology of oral submucous fibrosis: the stimulation of collagen synthesis by extracts of areca nut. Int. j. oral surg., 1981, 10: 163-167.
11. Seedat HA, van Wyk CW. Submucous fibrosis in non-betel-nut chewing subjects. J. biol. buccale, 1988, 16: 3-6.
12. Canniff JP et al. Oral submucous fibrosis: its pathogenesis and management. Br. dent. j., 1986, 160: 429-434.
13. Pindborg JJ, Sirsat SM. Oral submucous fibrosis. Oral surg. oral med. oral pathol. 1966, 22: 764-779.
14. Wahi PN et al. Submucous fibrosis of the oral cavity: histomorphological studies. Br. j. cancer, 1966, 20: 676-687.
15. Rajendran R et al. Serum iron and proteins in oral submucous fibrosis (OSMF). Annals dent., 1990, 49: 23-25.
16. Cox, S.C., Walker, D.M. Oral submucous fibrosis. A review. Aust. Dent. J. 1996; 41(5): 294-299.
17. Aziz, S.R. Oral submucous fibrosis: An unusual disease. JNJ Dent. Assoc. 1997; 68(2): 17-19.
18. Paissat, D.K. Oral submucous fibrosis. Int. J. Oral. Surg. 1981; 10(5): 307-312.
19. Murti PR, Bhonsle RB, Pindborg JJ, Daftary DK, Gupta PC, Mehta FS. Malignant transformation rate in oral submucous fibrosis over a 17-year period. Community Dent Oral Epidermol 1985;13:340-1.
20. Himalaya's Health Digest for You. Vol LI . No 3 . Jan-Mar 2012; 2.
21. Kanistha Kawpoomhae et al. Antioxidant and neuroprotective effects of standardized extracts of Mangifera Indica leaf. Thai J. Pharm. Sci. 34 (2010); 32-43.
22. Rice-Evans CA, Miller NJ, Bolwell PG, Bramley PM, Pridham JB. The relative antioxidant activities of plant-derived polyphenolic flavonoids. Free Rad Res 1995;22 (4): 375-83.
23. Girdhari Lal Guptaand A. C. Rana. Plant Review Withania Somnifera (Ashwagandha): A Review Pharmacognosy Reviews Vol 1, Issue 1, Jan- May, 2007; 129-36.
24. A Gurib-Fakim. Molecular Aspects of Medicine, 2006, 27, 1-93.
25. Ambawade SD, Kasture VS, Kasture SB., Anxiolytic activity of Glycyrrhiza Glabr Linn, J Natural Remedies, 2001; 2:130-34.
26. Ruhan İlknur Gazioglu Sensoy. Determination of phenolic substances and antioxidant activities in some grape cultivars by hplc. The Journal of Animal & Plant Sciences, 2012; 22(2):448-51.
27. Madhuri S. Antioxidant, immunomodulatory and anticancer activities of Emblica Officinalis: An overview. IRJP 2011; 2(8):138-42.

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28. El-Ghorab, A. and El-Massry, K. F. Free radical scavenging and antioxidant activity of volatile oils of local clove [Syzygium Aromaticum L.] and Cinnamon [Cinnamomum zeylanicum] isolated by supercritical fluid extraction [SFE]. J. Of Essential Oil of Bearing Plants 2003; 6:9-20.
29. Pemaiah B et al. Antidiabetic activity of a traditional Ayurvedic formulation-Jasad Bhasma. J Pharm Res 2010; 3:2916-8
30. Blokhina O, Virolainen E, Fagerstedt K. Antioxidants, oxidative damage and oxygen deprivation stress: a review. Ann Bot 2003; 91:179-94.
31. Kulkarni SD, Tilak JC, Acharya R, Rajurkar NS, Devasagayam TPA, Reddy AVR. Evaluation of the antioxidant activity of wheatgrass (Triticum aestivum L.) as a function of growth under different conditions. Phytother Res 2006; 20:218-27.

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