



## COMPARATIVE EVALUATION OF THE TOPICAL GLYCYRRHIZA GLABRA -EXTRACT WITH TRIAMCINOLONE ACETONIDE IN THE TREATMENT OF EROSIIVE ORAL LICHEN PLANUS- A PILOT STUDY

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**ABSTRACT** To compare the efficacy of Topical Glycyrrhiza glabra extract and Triamcinolone acetonide in the treatment of Oral Lichen Planus in terms of reduction in burning sensation & lesion size. This randomized controlled pilot project was conducted in the department of oral medicine and radiology. 10 clinically diagnosed patients of erosive oral lichen planus were divided into 2 groups of 5 each. Group A were given Glycyrrhiza glabra extract to be applied topically 3 times daily. Group B were prescribed commercially available Triamcinolone acetonide gel (Kenacort Orabase 0.1 %) to be applied 3 times daily. The treatment period for both groups were 2 weeks. Burning sensation (VAS) and lesion size were recorded at baseline (D0), after three days (D3), after seven days (D7) and at the end of treatment i.e. fourteen days (D14). Differences between groups were examined for statistical significance with Unpaired t test ( $p < 0.05$ ). Improvement was seen in both group A and group B in burning sensation on average VAS score values as well as lesion size. Both Glycyrrhiza glabra and Triamcinolone acetonide reduces the burning sensation & lesion size significantly on 14th day. However as compared to Glycyrrhiza glabra, Triamcinolone acetonide reduces burning sensation & lesion size more significantly.

**KEYWORDS :** Glycyrrhiza glabra, Triamcinolone acetonide, Oral Lichen Planus

### INTRODUCTION:

Oral lichen (OLP) is that the mucosal counterpart of cutaneous lichen planus. It's derived from the Greek word "leichen" means that tree moss and Latin word "planus" means that flat. It's a prevalence of approximately 0.5–2%. It has a female: male ratio of approximately 2:1 and may persist for many years.<sup>1</sup>

Lichen planus is thought to be result from an abnormal T-cell-mediated immune reaction within which basal epithelial cells recognized as foreign owing to changes within the antigenicity of their cell surface. The explanation for this immune-mediated basal cell injury is unknown. Many forms of OLP are delineate, the two main forms being reticular and erosive OLP. Erosive OLP is that the second most common form, initial one is reticular OLP. It presents as a combination of erythematous and ulcerated areas encircled by finely diverging keratotic striae. The lesions of erosive OLP migrate over time and have a tendency to be multifocal. Patients with this form of OLP usually present with symptoms starting from episodic pain to severe discomfort which will interfere with normal masticatory function. The foremost wide accepted treatment for lesions of OLP involves topical or general corticosteroids to modulate the patient's immune reaction.<sup>2</sup>

Glycyrrhiza glabra (Licorice, from the Papilionaceae/Fabaceae family) may be a traditional medicinal herb, which grows in numerous components of the planet. It's a really sweet, wet and soothing herb. Roots of Glycyrrhiza glabra are long, cylindrical, thick and multi-branched. Many study have been reported that it has antimicrobial, anti-inflammatory drug and antiviral properties. A root element (glycyrrhizin) is being typically considered the main biologically active element. Liquorice root includes the subsequent components: 20% moisture, 5–24% glycyrrhizin, 3–16% sugar, 30% starch and 6% ash. Licorice is employed to alleviate inflammation, pharyngitis, gastric and peptic ulcers, arthritis, eye and liver diseases and sex-hormone imbalance. Also, its anti-Helicobacter pylori and medicinal drug activities.<sup>3</sup> In past, topical steroid like triamcinolone acetonide

has been used in the treatment of OLP in some success. Major reason for effectiveness of triamcinolone acetonide is due its anti-inflammatory property. This study addresses the application of traditional folk medicine for developing new pharmaceutical preparations comprising natural biologically active compounds to treat oral lichen planus and reduce side effects of synthetic drug.<sup>4</sup> Thus this pilot study has been carried out with the aim of comparing the effect of Glycyrrhiza glabra and Triamcinolone acetonide on the burning sensation & lesion size in patients suffering from erosive oral lichen planus.

### MATERIALS AND METHOD

The present study included 10 subjects, clinically diagnosed with Erosive oral lichen planus reporting to the Department of Oral Medicine and Radiology. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study. General information such as name, age, gender etc. was recorded. Patients with age group 20–60 years, clinically diagnosed with Erosive Oral lichen Planus, Patients willing to participate in the study were included in the study. Patients with known systemic condition (Diabetes mellitus, Hypertension etc.), Patients with any other oral lesion, Patients allergic to Glycyrrhiza glabra and/or Triamcinolone acetonide, Patients with metallic restorations in oral cavity / patients receiving long term medication, Patients who has taken any treatment for oral lichen planus three months prior were excluded in the study. They were divided into 2 groups of 5 each. Group A Patients were given Glycyrrhiza glabra extract to be applied topically 3 times daily. (Extract was prepared by local pharmacy laboratory). Group B Patients were prescribed commercially available Triamcinolone acetonide gel (Kenacort Orabase 0.1 %) to be applied 3 times daily. The treatment period for both groups were 4 weeks.

### Method of preparation of Glycyrrhiza glabra root extract

A 500 g of Glycyrrhiza glabra root powder was dispensed into a 25 L beaker, and 2 L of distilled water was added to it. The mixture was

stored overnight at room temperature and then the extract was boiled at high temperature, isolated and filtered using a thin muslin cloth. After that extract was placed in a rotary vacuum distiller to obtain a resin like mixture. Then mixture was refrigerated away from direct light.<sup>3</sup>

Baseline data was recorded for each patient. Burning sensation and lesion size were recorded at baseline (D0), after three days (D3), after seven days (D7) and at the end of treatment i.e. fourteen days (D14), also evaluated pre and post treatment improvement. Patients were advised not to eat or drink for 30 min after the application of the Glycyrrhiza glabra extract. Burning sensation and size of lesion was evaluated at each visit. Size of lesion were evaluated by using a metal caliper device. Clinical parameters such as burning sensation were evaluated by using a visual analog scale. Results thus obtained were subjected to statistical analysis using paired and unpaired t-test. P value less than 0.05 was considered significant.

**RESULTS**

Comparison of burning sensation in oral Lichen planus patients receiving Glycyrrhiza glabra with that of 0.1% Triamcinolone Acetonide, two groups of 5 patients each were given the treatment and their VAS score and lesion size(LS) were recorded at baseline (D0), after three days (D3), after seven days (D7) and at the end of treatment i.e. fourteen days (D14). The recorded parameters for Glycyrrhiza glabra are compared with those of 0.1% Triamcinolone acetonide separately at the end of every time interval using unpaired t test at 8 degrees of freedom and 95% confidence level. Table 1 shows the results obtained for the same.

**Table 1: Comparison between glycyrrhiza glabra and 0.1% triamcinolone acetonide group**

Parameter	Days	Mean Score		S.D.		P Value
		Glycyrrhiz a glabra	0.1% TA	Glycyrrhiz a glabra	0.1% TA	
Burning Sensation (VAS)	D0	8.4	8.6	0.264575	0.244949	0.24999
	D3	8.2	8	0.2	0.158114	0.1175
	D7	7.2	6.8	0.339116	0.316228	0.089863
	D14	6.6	6	0.353553	0.212132	0.011632
Lesion Size (in mm2)	D0	22.8	19	0.158114	0.484768	P < 0.0001
	D3	22.8	19	0.158114	0.484768	P < 0.0001
	D7	22.8	18.2	0.158114	0.509902	P < 0.0001
	D14	21.58	17.6	0.325192	0.538516	P < 0.0001

It can be observed that there is no significant difference in average value of VAS score as well as average lesion size from day zero till seventh day, but on fourteenth day the difference in average VAS score and also the average lesion size in the groups treated with two different medicines is found significant. Thus it can be concluded that both medicines are equally effective in improving burning sensation in oral Lichen planus patients at the end of fourteenth day.

Similarly to evaluate pre-treatment and post treatment improvement due to Glycyrrhiza glabra as well 0.1% Triamcinolone Acetonide patients of oral lichen planus, paired t test is applied at 4 degrees of freedom and 95 % confidence level separately to both the groups. The recorded values of VAS score at baseline (D0) and after fourteen days (D14) were compared and the results obtained are shown in Table 2.

From the Table 2 it can be observed that both medicines show significant improvement in burning sensation on average VAS score values as well as lesion size. Thus both the treatment medicines are effective in improvement of burning sensation in oral lichen planus patients.

**Table 2: Within group comparison for novel gel and 0.1% triamcinolone acetonide**

Group	Parameter	Mean Score		S.D.		P Value
		Before Treatment	After Treatment	Before Treatment	After Treatment	
Glycyrrhiza glabra	VAS	8.4	6.6	0.264575	0.353553	0.002247
	Lesion Size	22.8	21.58	0.158114	0.325192	0.000658

0.1% TA	VAS	8.6	6	0.244949	0.212132	P < 0.0001
	Lesion Size	19	17.6	0.484768	0.538516	0.003198

**DISCUSSION**

The most goal within management of OLP is to determine an early treatment supported an explicit designation, that correct understanding of OLP pathological process is important. Topical corticosteroids believed to be the first-line treatment for OLP and modulate inflammation response by reducing lymphocytes exudates and stabilizing lysosomal membrane. Due to severity of OLP lesions, topical corticosteroids like mid-potent corticoid acetonide, high-potent fluocinonide, betamethasone phosphate, or superpotent halogenated clobetasol propionate is also used. Most disadvantage of topical corticosteroids is their low adherence to the mucous membrane for an extended amount of time. Most studies indicated that topical corticosteroids are safe once applied to the mucous membrane for a small period of time, up to six months. However, longstanding use of corticosteroids, particularly as a gargle, could cause adrenal suppression in OLP patients and frequent follow-up controls are suggested.<sup>5</sup>

Glycyrrhiza glabra extract and its major component, glycyrrhizin, have extensive use in both traditional and herbal medicine<sup>6</sup>; also, glycyrrhizic acid component that has only a few rare side effects, is usually recognized as safe by the US Food and Drug Administration.<sup>7</sup> Also, many studies have been reported Glycyrrhiza glabra has anti-bacterial, anti-fungal, anti-viral and anti-allergy properties. Within the analysis on effects of Glycyrrhiza glabra, it has been noted that via inhibiting β- hydroxysteroid dehydrogenase enzyme, this plant blocks the conversion of hydrocortisone to cortisone as an inactive anti-inflammatory steroid, revealing its therapeutic effects in the target tissue. Salehi M et al 2017, study have revealed meaningful difference in pain and aphthous ulcer's diameter and this can be due to the applied licorice mucoadhesive tablets.<sup>8</sup> Marin et al 2008, conducted a study which showed that the aphthous ulcer size has dramatically decreased on D8 using mucoadhesive licorice extract tablets.<sup>9</sup> Molania T et al 2017, study showed that aqueous extract of Glycyrrhiza can be effective for decreasing the severity of oral mucositis in head and neck cancer patients undergoing radiotherapy. There were some limitations on our study. We could not measure exact baseline characteristics to explore the definite protective effects of Glycyrrhiza extract. The limitation this study were duration of intervention and sample size of the study. While studies on Glycyrrhiza and its use during OLP, in particular, are rare, it is recommended to perform similar studies on higher number of patients with a longer follow up and different dosages to better evaluate the efficacy of this extract and compare its protective effects with other treatment modalities.<sup>3</sup>

**CONCLUSION**

Both Glycyrrhiza glabra and Triamcinolone acetonide reduces the burning sensation & lesion size in patients suffering from erosive oral lichen planus significantly. However as compared to Glycyrrhiza glabra, Triamcinolone acetonide reduces burning sensation & lesion size more significantly on 14th day in patients suffering from erosive oral lichen planus

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