

## Role of Epidermal Growth Factor in Oral Lichen Planus

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### ABSTRACT

OLP is the mucosal counterpart of cutaneous LP which is a chronic mucocutaneous disorder of stratified squamous epithelium that affects oral and genital mucous membranes, skin, nails, and scalp. Epidermal Growth Factor (EGF) is the prototypical member of a family of peptide growth factors that activate the EGFR, Despite the strong association of EGFR over expression with oral carcinogenesis, although few studies have analyzed its expression in OLP. The aim of this work is to measure serum and tissue levels of EGF in patients with oral lichen planus in comparison to normal controls, in order to investigate the role of EGF in the pathogenesis of oral

lichen planus. This study was conducted in Dermatology, STDs and Andrology Department of Fayoum University Hospital in the period between March 2017 and February 2018. 49 patients were included, 29 patients had OLP and 20 apparently healthy volunteers as control group. Our results shows statistically significant correlation between EGF and OLP (p value  $\leq 0.001$ ) denoting the strong correlation between EGF and OLP.

**KEY WORDS:** Oral lichen planus, Epidermal growth factor, Lichen planus.

### INTRODUCTION

Lichen planus (LP) is an inflammatory mucocutaneous condition with characteristic clinical and histopathological findings. It is a disorder of the stratified squamous epithelium affecting skin, oral and

genital mucous membranes, nails, and scalp[1]. In the oral cavity, the disease is somewhat different in clinical appearance than on the skin[2].

OLP is one of the most common oral mucosal lesions affecting 0.5% to 2% of

the adult population. It mainly affects middle-aged and elderly, and is more prevalent in women than in men[3].

Epidermal growth factor (EGF) is a member of a family of peptide growth factors that activate the EGF receptors, and that the EGF/EGFR signalling pathway plays important roles in proliferation, differentiation and migration of a variety of cell types, especially in epithelial cells. Recently

**PATIENTS AND METHODS**

The aim of this study is to explain if there is a relationship between EGF level and pathogenesis of OLP by detecting the level of EGF in serum and tissue in OLP and comparing them to control healthy group. This study was conducted on twenty-nine OLP patients

studies denote that EGF and its signalling pathway have extended to a broad range of biological and pathophysiological roles in development and in human diseases[4].

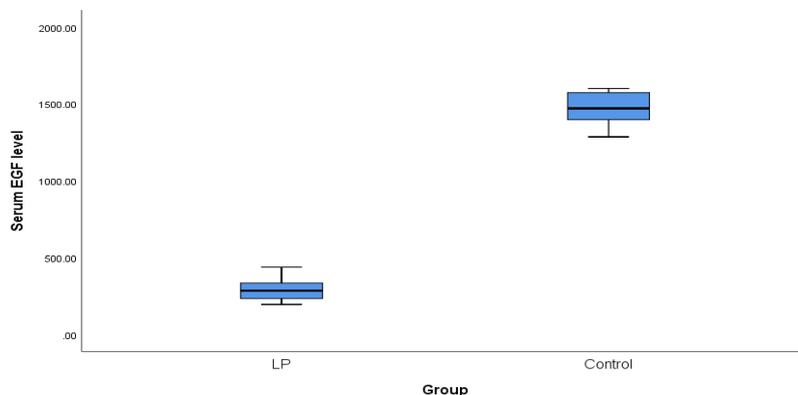
Despite the strong association of EGFR overexpression with oral carcinogenesis of oral potentially malignant lesions (OPML), few studies have analysed its expression in OLP, showing controversial results[5].

and twenty volunteers of different age groups and both sexes. All Patients were subjected to detailed history taking and complete dermatological and oral examination. Serum and tissue samples are collected from all patients of both groups to assess level of EGF.

**RESULTS**

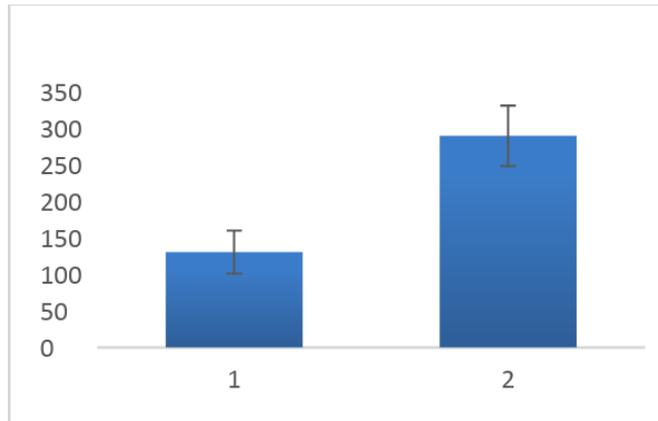
1. This study revealed that there is a statistically very high significant difference between OLP group and control group as regard serum level of EGF (p-value ≤ 0.001)

		Groups		Mann-Whitney U	P value
		OLP	Control		
Serum level of EGF (pg / ml )	Median	284.580	1471.5	790.000	0.000 VHS
	Range	194.97-511.4	1286-1901		



2. This study revealed that there is a statistically very high significant difference between OLP group and control group as regarding tissue level of EGF (p-value ≤ 0.001)

		Groups		T test	P value
		OLP	Control		
Tissue level of EGF ( pg/ml)	Mean SD	130.74±29.31	289.86±41.48	15.786	0.000 <sub>HS</sub>
	Range	88.30-204.30	234.80-378.20		



3. When studying the correlation between serum level of EGF in relation to tissue level of EGF and pain and ulcer score, the study revealed that there was a statistically significant correlation between serum level of EGF and tissue level of EGF and also with ulcer score (p-value ≤ 0.001)

Items	Pearson correlation coefficient (r)	P. value	Significance
Tissue level of EGF	0.597	>0.001	Very High Significant
Pain score	-0.112	0.562	Non-Significant
Ulcer score	0.663	>0.0001	Significant

## DISCUSSION

Epidermal growth factor is the prototypical member of a family of peptide growth factors that activate the EGF receptors, and that the EGF/EGF receptor signaling pathway plays important role in proliferation, differentiation and migration of a variety of cell types, especially in epithelial cells. After that, the studies related to EGF and its signaling pathway have extended to a broad range of investigations concerning its

biological and pathophysiological roles in development and in human diseases[4].

In this study, according to statistical results of serum and tissue levels of EGF in OLP and control groups, the levels were significantly lower in OLP group compared to healthy control group (p <0.05).

Although **Cortés-Ramírez et al. (2014)**, demonstrated that EGFR is

overexpressed in a great percentage of OLD cases[6].

**Agha-Hosseini et al.(2015)**, as well as this study have observed that the mean serum EGF in OLP and OSCC patients was significantly lower compared to healthy control group ( $p < 0.05$ ), but no significant difference was observed between OLP and OSCC patients.

## CONCLUSION

In conclusion, the mean serum and tissue level of EGF in OLP patients was significantly lower compared to healthy control . There is a strong correlation

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There was no significant difference in mean salivary EGF among groups. As serum EGF levels appear to be statistically similar in OLP and OSCC, it seems that EGF might play a role in the pathogenesis of OLP and its cancerization[7].

between EGF and OLP, but the previous studies done are not sufficient enough to explain this relation.

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