Diagnostic Efficacy of Annexin A1 in Induced Dysplasia and Squamous Cell Carcinoma of Tongue in Experimental Rats (Animal Study)

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This thesis is dedicated to the memory of my father **Dr. Mohammed Afifi**, who has raised me, loved me unconditionally, and taught me the value of hard work and continuous learning. You made me the person I have become. I will always make sure your memory lives on as long as I live. I love you and I miss you beyond words. I hope you are proud of your little girl.

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DECLARATION

I declare that this thesis and the work presented in it are my own and that I have consulted all the references cited. This work has been carried out in the Faculty of Dentistry, Cairo University, under the guidance of Dr. Amal Hassan Abdel-Rahman and Dr. Heba Mahmoud Dahmoush.

SIGNATURE **DATE**

DOHA MOHAMMED AFIFI AUGUST, 2017

LIST OF ABBREVIATIONS

Abbreviations	Full name
ANXA1	Annexin A1
CAFs	Cancer‑associated fibroblasts
cPLA2	Cytosolic Phospholipases A2
DAB	Diaminobenzidine
DMBA	7,12-dimethylbenz[a]anthracene
EGF	Epidermal growth factor
ELISA	Enzyme Linked Immunosorbent Assay
EM	Eastern Mediterranean
FPRs	Formyl-peptide receptors
H&E	Haematoxylin and Eosin
HRP	Horseradish Peroxidase
IL-6	Interleukin-6
OSCC	Oral squamous cell carcinoma
SCC	Squamous cell carcinoma
TMB	Tetramethylbenzidine
VEGF	Vascular endothelial growth factor
WHO	World Health Organization

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INTRODUCTION

The success of cancer therapy depends considerably on early diagnosis. Therefore, studies aimed to develop a widely available, cheap, non-invasive methods suitable for screening high-risk populations to detect early signs of malignant transformation in the oral cavity **(Szanto et al., 2012).**

Recent advances in molecular biology have led to the development of potentially useful diagnostic tools for the early detection of oral cancer. The gold standard for oral cancer diagnosis remains tissue biopsy with histological assessment, but this technique needs a well-trained health-care provider and is considered invasive, painful, expensive and time consuming **(Messadi, 2013).**

The analysis of biomarkers in saliva as a clinical application offers an attractive, simple and rapid diagnostic tool for monitoring of pathological disorders and drug therapy. The collection of saliva is a relatively easy non-invasive procedure that is not harmful to the patients and has no complications at all **(Krapfenbauer et al., 2014).**

Annexins are Ca_2^+-regulated, phospholipid dependent, membrane-binding, highly abundant intracellular proteins **(Wu et al., 2013).** Annexin A1 is the first known member of the annexin superfamily. Annexin A1 participates in a variety of important biological processes, such as cellular transduction, inflammation, phagocytosis and apoptosis. Accumulated evidence has indicated that annexin A1 deregulations are associated with the development, invasion, metastasis, occurrence and drug resistance of cancers. Recently, it was proposed that annexin A1 has the potential to be used in future as a biomarker for the diagnosis, treatment and prognosis of certain cancers **(Guo et al., 2013).**

Scarce studies were done on salivary annexin A1 in different cancers. Thus, this marker needs further investigations.

REVIEW OF LITERATURE