HISTOLOGICAL AND HISTOCHEMICAL STUDY OF THE PREVENTIVE ACTION OF GINGER ON THE SUBLINGUAL AND SUBMANDIBULAR SALIVARY GLANDS OF RATS AFTER LEAD INTOXICATION

Thesis

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Oral Biology

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Thank you,,,

Dedication

TO MY PARENTS ,

Who made me what I am today
Thank You, for being my family,

TO MY DEAR SISTER Nancy

And her kids Zina, Hanya & Mariem

دراسة هستولوجية وهيستوكيميائية للتأثير الواقى للزنجبيل علي الغدد اللعابية تحت اللسانية وتحت الفكية فى الفئران بعد التسمم بالرصاص

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تمهيداً للحصول علي درجة الماجستير فى
بيولوجيا الفم

مقدمة من

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قَالُواْ سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا
عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ

سورة البقرة
(٣٢)

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LIST OF ABBREVIATIONS

Abbreviation	Term
B.VS.	Blood vessels
C	Control Group
C.T.	Connective tissue
EXP.G.I	Experimental group ١
EXP.G.II	Experimental group ٢
EXP.G.III	Experimental group ٣
GCTS	Granular convoluted tubules
H & E	Hematoxylin and Eosin stain
MBB	Mercuric Bromphenol blue stain
PAS	Periodic acid schiff
RBCs	Red blood cells
SLG	Sub-lingual gland
SMG	Sub-mandibular gland

INTRODUCTION

The SMG are major salivary gland located in the submandibular triangle. The SMG consists of two lobes. The anterior lobe is composed of mixed mucus and serous acini. The posterior lobe is serous. The connective tissue septa contains numerous fat cells. The SLG lie between the floor of the mouth and the mylohyoid muscle. The SLG are composed of major mixed and minor pure mucous glands. ***(Whelton, H. 1996 and Bhasker, S.N. 1998)***.

Lead (Latin plum bum) is an element that has been known, having been mentioned in the book of Exodus. Toxic effect of lead on many organs in animals and rats was followed up by ***Andrzejewska, et al., (1994)***. There are evidences indicating that lead treatment can damage and destroy acinar cells of the pancreas and parotid gland ***(Abdollahi, et al. 2001)***.

Ginger is a tuber which is consumed whole as a delicacy, medicine, or spice. It is the rhizome of the plant Zingiber officinale ***(McGee, H., 2004)***.

Ginger for long time has been used as a solution to treat nausea. Gingers anti-inflammatory properties medicate pain and medicate the inflammation associated with arthritis, muscle spasm and rheumatism ***(Corwin, B. 2008)***.

There are many reported studies on biochemical and structural changes in various organs due to chronic effects of lead but few reports exist on unfavorable effects of lead on salivary glands. Accumulation of lead in rat salivary glands and its secretion into saliva need comprehensive study.

REVIEW OF LITERATURE

Salivary glands of rodents are important elements regarding their adaptation to different diats, environments and taxonomic studies ***(Yamada, et al., 2006; Stimson, et al., 2007)***.

Many efforts have been made to increase our knowledge about hidden effects of some naturally available products as Tilia , Arise, Cinnamon and Ginger to antagonize or prevent the drastic actions on various tissues.

I. Submandibular and sublingual salivary glands.

Salivary glands have an important role in terrestrial animals, provide lubrication for eating, aid digestion and supply saliva for pH buffering ***(Jaskoll, et al. , 2002)***.

The major submandibular salivary gland are located in the submandibular triangle behind and below the free border of the mylohyoid muscle with a small extention lying above the mylohyoid muscle and enclosed within a well formed connective tissue capsule which contains fat cells ***(Whelton, H. 1996 and Bhaskar, S.N. 1998)***.

The submandibular gland is a mixed gland with both serous and mucous secretory units with the serous units predominates. The mucous terminal portions are capped by demilunes of serous cells. In the rat, the submandibular gland produces small amount of Amylase ***(Tamarin, A. and Sreebng, L.M. 1989)***.

The sublingual salivary glands are located in the sublingual fossa and composed of major mixed predominate mucous and

minor pure mucous glands. Their ducts open in the floor of the mouth. The mucous cells possess spongy cytoplasm and flattened an basal nuclei ***(Tucker, 2007)***.

II. Histology and histochemistry of submandibular and sublingual salivary glands.

To reach a delicate analysis, there is need to study salivary glands histologically and histochemically. Two of the major are submandibular and sublingual salivary glands ***(Buchalczyk, 1991; Kimura, J. et al., 1998)***.

Basically the shape of the mucous secreting cells are cubic to cylindrical, their nuclei are ellipse. The shape of the serous secreting cells is pyramidal in shape, with its broad base. The spherical nucleus is located in the basal region of the cell ***(Carmanchahi, et al., 2000)***.

The two components of each gland differ in their histology and histo-chemistry. Mucous acinar cells show a strong positive reaction to Alcian Blue (AB) but weakly reacte to PAS were observed. The serous cells of demilunes and acini were strogly positive for PAS ***(Estecondo, S. et al., 2005 . Zuber, C. et al., ٢٠٠٧)***

Histochemically, mucosal units react strongly with staining techniques, AB and PAS ***(Shackleford and Schneyer, 1964)***. Mucins with acidic properties of ٢ categories: Sialomucins (containing cialic acid) and sulfomucins (containing sulfate group). Mucins lacking detectable acidic properties are called natural mucin ***(Kimura, et al., 1998)***.