

Effect of Phosphodiesterase Inhibitors and Testosterone on Cavernous Tissue Apoptotic Process

Thesis

Submitted for the fulfillment of
M.Sc. Degree in Dermatology, Andrology & STDS

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2009

تأثير العلاج بمضادات الفسفودايستيرز
والتستوستيرون علي موت الخلية المبرمج
بالنسيج الكهفي

رسالة مقدمه من

الطبيبة/ خلود عبد المنعم السيد قطب
بكالوريوس الطب و الجراحة

توطئة للحصول علي درجة الماجستير في
الأمراض الجلدية و التناسلية

المشرفون

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List of Abbreviations

AGEs	Advanced glycation end products
BAX	Bcl2 associated X protein
Bcl2	B cell lymphoma 2
CC	Corpora cavernosa
cGMP	Cyclic guanylyl monophosphate
CVOD	Corporal veno-occlusive dysfunction
DHT	Dihydrotestosterone
ED	Erectile dysfunction
EDTA	Ethylene diamine tetra acetate
EF	Erectile function
ET	Endothelin
eNOS	endothelial nitric oxide synthase
ETB	Endothelium B
GAQ	Global assessment questions
GC	Guanylyl cyclase
GFP	Green fluorescent protein
GPx	Glutathione peroxidase
HO-1	Heme oxygenase
IACUC	Institutional animal care and use committee
ICPs	Intracavernous pressures
ICP	Intracorporal pressure
ICI	Intracorporal injection
IIEF	International index of erectile function
iNOS	Inducible nitric oxide synthase
MDA	Malondialdehyde
MMAS	Massachusetts male aging study
MSCs	Mesenchymal stem cells
nNOS	Neural nitric oxide synthase
NO	Nitric oxide
NT3	Neurotrophin-3
PDE-5	Phosphodiesterase-5
PKG	GMP-dependent protein kinase
ROS	Reactive oxygen species
SMCs	Smooth muscle cells
STZ	Streptozotocin
T	Testosterone
VEGF	Vascular endothelial growth factor

Abstract

Aim: To assess improved apoptotic process in diabetic rats treated with PDE-5 Is and/or T.

Materials and Methods: One hundred and sixty five aged male Sprague Dawley rats (200-250 gm) were divided into; controls, STZ- induced diabetic rats, diabetic rats on sildenafil day after day (2 mg/kg & 4 mg/kg), diabetic rats on 22.5 mg/kg IM T once, diabetic rats on sildenafil and T (2 mg/kg & 4 mg/kg), diabetic rats on 0.45 mg/kg tadalafil day after day, diabetic rats on tadalafil and T, diabetic rats on sildenafil and tadalafil and diabetic rats on sildenafil, tadalafil and T. In dissected cavernous tissues (after 4 weeks) gene expression of iNOS, BAX & Bcl₂ was done and MDA, GPx, cGMP were estimated.

Results: Cavernous tissues of diabetic rats showed significant decrease in iNOS, cGMP, Bcl₂, GPx and significant increase in BAX, MDA compared with the controls. Diabetic rats on sildenafil or tadalafil intake showed significant increase in iNOS, cGMP, Bcl₂, GPx and significant decrease in BAX, MDA compared with diabetics. Diabetic rats on T alone showed significant increase in cGMP, Bcl₂, GPx and significant decrease in BAX, MDA compared with diabetics. Diabetic rats on sildenafil & T or tadalafil & T showed significant improvement in tested parameters compared with diabetics or diabetic on PDE-5Is alone. Diabetic rats on sildenafil & tadalafil with or without T showed significant improvement of in tested parameters compared with other groups.

Conclusion: PDE-5Is and T have an anti-apoptotic cavernous tissue effect separately or combined.

Key Words: cavernous tissue, ED, PDE-5Is, apoptosis, ROS..

INTRODUCTION

AIM OF WORK

**REVIEW OF
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REFERENCES

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