

Evaluation of Oral Zinc Sulfate in the Treatment of Multiple Viral Warts

Thesis

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LIST OF ABBREVIATIONS

5-FU	:	5-Fluorouracil
ACTH	:	Adrenocorticotrophic hormone
ADE	:	Acrodermatitis enteropathica
AIDS	:	Acquired immunodeficiency syndrome
AK	:	Actinic keratosis
ALA	:	Amino levulinic acid
APC	:	Antigen presenting cell
BCG	:	Bacillus Calmette-Guérin
BP	:	Bowenoid papulosis
CIN	:	Cervical intraepithelial neoplasia
CIS	:	Cervical carcinoma in situ
CMI	:	Cell mediated immunity
CO₂	:	Carbon dioxide
Cu⁺⁺	:	Copper
DC	:	Dendritic cell
DNA	:	Deoxyribonucleic acid
DNCB	:	Dinitrochlorobenzene
DPCP	:	Diphencyprone
E	:	Early region
EBV	:	Epstein-Barr virus
EDTA	:	Ethylenediaminetetra acetic acid
ELISA	:	Enzyme-linked immunosorbent assay
Er:YAG	:	Erbium:Yttrium/ Aluminum/ Garnet

LIST OF ABBREVIATIONS (CONT.)

EV	:	Epidermodysplasia verruciformis
Fe⁺⁺	:	Iron(ferrous)
Fe⁺⁺⁺	:	Iron(ferric)
FEH	:	Focal epithelial hyperplasia
FSH	:	Folliculocyte stimulating hormone
GH	:	Growth hormone
HC	:	Hybird capture
HIV	:	Human immunodeficiency virus
HPV	:	Human Papillomavirus
HO⁻	:	Hydroxide ion
H₂O₂	:	Hydrogen peroxide
IAEA	:	International Atomic Energy agency
IL	:	Interleukin
IFN	:	Interferon
Ig	:	Immunoglobulin
IZiNCG	:	International Zinc Nutrition Consultative Group
L	:	Late region
LC	:	Langerhans cell
LCR	:	Long control region
LDL	:	Low density lipoprotein
LEEP	:	Loop electrosurgical excision procedure
LP	:	Lipopolysaccrides
MC	:	Molluscum contagiosum

LIST OF ABBREVIATIONS (CONT.)

MHC	:	Major histocompatibility complex
MRNA	:	Messenger Ribonucleic acid
MT	:	Metallothionein
Mw	:	Mycobacterium
NADPH	:	Nicotinamide adenine dinucleotide phosphate
Nd:YAG	:	Neodymium: Yttrium/ Aluminum/ Garnet
NF	:	Nuclear factor
NK	:	Natural killer cell
OH	:	Superoxide
OHL	:	Oral hairy leukoplakia
OTC	:	Over the counter
P21	:	Protein 21
Pap	:	Papanicolaou
PCR	:	Polymerase chain reaction
PDL	:	Pulsed dye laser
PIN	:	Penile intraepithelial neoplasia
PPD	:	Purified protein derivative
PPEC	:	Palmoplantar epidermal cyst
RDA	:	Recommended Dietary Allowance
RNA	:	Ribonucleic acid
ROS	:	Reactive oxygen species
RRP	:	Recurrent respiratory papillomatosis
SADBE	:	Squaric acid dibutyl ester

LIST OF ABBREVIATIONS (CONT.)

SCC	:	Squamous cell carcinoma
SLC	:	Solute-linked carrier
SOD	:	Superoxide dismutase
STI	:	Sexually transmitted infection
T3,4	:	Thyroxin hormone
TCA	:	Trichloroacetic acid
Th	:	T helper
TNF	:	Tumor necrosis factor
TRAF	:	Trans-activating facto
TSH	:	Thyroid stimulating hormone
UNICEF	:	The United Nations Children's Fund
VAIN	:	Vaginal intraepithelial neoplasia
VIN	:	Vulvar intraepithelial neoplasia
VLP	:	Virus-like particle
WHIM	:	Warts, Hypogammaglobulinemia, Infections and Myelokathxis
WHO	:	World Health Organization
ZIP	:	Zinc importer
Zn⁺⁺	:	Zinc
ZNT	:	Zinc transporter

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وَأَنْزَلَ اللَّهُ عَلَيْكَ
الْكِتَابَ وَالْحِكْمَةَ
وَعَلَّمَكَ مَا لَمْ تَكُنْ
تَعْلَمُ وَكَانَ فَضْلُ
اللَّهِ عَلَيْكَ عَظِيمًا

صدق الله العظيم

سورة النساء الآية
(113)



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*@ **Manal Sayed Ahmed El-Maghawry***



INTRODUCTION

Cutaneous warts are a common presenting complaint in children and adolescents. They are caused by human papilloma virus (HPV). The treatment of warts poses a therapeutic challenge for physicians. No single treatment has been proved effective at achieving complete remission in every patient. As a result, many different approaches to wart therapy exist (*Bacelieri and Johnson, 2005*).

There are various types of viral warts including common warts, plantar warts, mosaic warts, plane or flatwarts, periungual warts, filiform warts, oral warts and genital warts (*Aubin and Laurent, 2006*).

Common therapeutic modalities for viral warts include cryotherapy, keratolytics, topical immunotherapy with contact sensitizer, oral cimetidine, antimitotic agents, carbon dioxide laser, electrosurgery, photodynamic therapy, intralesional injection of antigens and topical immune response modifiers (*Park and Choi, 2008*).

Zinc is an important element that is found in every cell in the body. More than 300 enzymes in the body need zinc in order to function properly. It was found that some patients with multiple warts had low serum zinc levels and that oral zinc supplements may help the body get rid of viral warts (*Al-Gurairi et al., 2002*).