بسم الله الرحمن الرحيم

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تم رفع هذه الرسالة بواسطة / مني مغربي أحمد

بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

ملاحظات: لا يوجد

Assessment of the Serum Ischemia Modified Albumin Level and its Relation to Total Oxidant Status and Disease Activity in Vitiligo Patients

Thesis

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Presented By

Nada Ahmed Abdo Elzainy
M.B.B.Ch.
Faculty of Medicine, Ain Shams University

Under Supervision of

Prof. Dr. Hanan Mohammed Saleh
Professor of Dermatology, Venereology and Andrology
Faculty of Medicine, Ain Shams University

Assist. Prof. Dr. Marwa Yassin Soltan
Assistant Professor of Dermatology, Venereology and Andrology
Faculty of Medicine, Ain Shams University

Faculty of Medicine
Ain Shams University
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Nada Ahmed Abdo Elzainy

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List of Abbreviations

Abb.	Full term
ABSU	Absorbance units
ACB	Albumin-cobalt binding
ANA	Antinuclear antibodies
ASDB	Amelanotic with sharply demarcated borders
AUC	Area under curve
bFBGF	Basic fibroblast growth factor
BMI	Body mass index
BSA	Body surface area
CAT	Catalase
CD8+	Cytotoxic T cell
CoCl2	Cobalt ions
DAMPs	Damage-associated molecular patterns
DOPA	Dihydroxyphenylalanine
DTT	Dithiothreitol
ELISA	Enzyme-Linked Immunosorbent Assay
ET-1	Endothelial 1
FDA	Food and drug administration
GSH	Glutathione
GSH-PX	Glutathione peroxidase
H2O2	Hydrogen peroxide
HMB-45	Human melanoma black-45
HPDB	Hypomelanotic with poorly defined borders
HS	Highly significant
IMA	Ischemia Modified Albumin
INF-γ	Interferon gamma
IQR	Inter-quartile range
MBEH	Monobenzylether of hydroquinone
MDA	Malondialdehyde
MF	Masson Fontana stain
MHC2	Major histocompatibility complex 2
NCES	Non cultured epidermal suspension
NO	Nitric oxide
NPs	Neuro-peptides
NPV	Negative predictive value

List of Abbreviations cont...

Abb.	Full term
NPY	Neuro-peptide Y
NS	Non significant
NSV	Non segmental vitiligo
O.D	Optical indensity
O2-	Superoxide anion
OMP	Oral mini-pulse
PPV	Positive predictive value
PUFA	Polyunsaturated fatty acid
PUVA	Psoralen plus UVA
QOL	Quality of life assessment
ROC	Receiver operating characteristic curve
ROS	Reactive oxygen species
S	Significant
SCF	Stem cell factor
SNPs	Single nucleotide polymorphisms
SOD	Super-oxide dismutase
SPSS	Statistical Package for Social Science
TAS	Total antioxidant status
TCI	Topical calcineurin inhibitors
TLR	Toll like receptor
TOS	Total Oxidant Status
Tregs	Regulatory T cells
VASI	Vitiligo Area Scoring Index
VETF	Vitiligo European Task Force Assessment
VETI	Vitiligo Extent Tensity Index
VIDA Score	Vitiligo Disease Activity Score

1. INTRODUCTION

Vitiligo is an acquired depigmentary skin disorder characterized by loss of functioning epidermal melanocytes. It occurs worldwide. Both genders and all races are affected ***(Bergqvist et al., 2020).***

The etiopathogenesis of vitiligo is complex and unclear. Several etiological factors have been suggested such as autoimmune mechanism, genetic and environmental factors ***(Furue et al., 2016).***

Among the etiological factors, oxidative stress can directly disturb melanin metabolism and undermine melanocyte survival through excessive accumulation of cytotoxic hydrogen peroxide. Oxidative stress may play an essential role in activating subsequent autoimmune responses related to vitiligo ***(Xie et al., 2015).***

Reactive oxygen species (ROS) which are induced by multifactorial process and in conjunction with the impaired antioxidant defenses, lead to the loss of melanocyte redox homeostasis, and therefore, the stressed melanocytes generate damage-associated molecular patterns (DAMPs) or auto-antigens then initiate innate immunity and adaptive immunity, leading to the dysfunction and death of melanocytes ***(Wang et al., 2019).***

High levels of reactive oxidative species (ROS) are observed in patients with active vitiligo, this is probably correlated with increased intracellular ROS production in the tissue of these patients

(Ines et al., 2009). Akoglu et al. (2013) found that total oxidant status serum levels (TOS) were higher and total antioxidant status serum levels (TAS) were lower in patients with vitiligo than in controls.

Ischemia-modified albumin (IMA) is a new biomarker for ischemia ***(Hatice et al., 2017).*** As in ischemic status, albumin loses binding capacity and the ability of transition metals on the N-terminal ends. A high level of IMA is also detected in diseases related to oxidative stress, such as psoriasis, vascular injury of diabetes mellitus, multiple sclerosis, some cancers, acute appendicitis, polycystic ovary syndrome and β-thalassemia major ***(Ahmad et al., 2016)***.

Ischemia-modified albumin (IMA) has been described as a biomarker of oxidative stress and extensively investigated recently ***(Shevtsova et al., 2021). Ozdemir et al. (2012)*** noted that IMA could be produced as an adaptive response to chronic hypoxia and oxidative stress. It has been shown that IMA had a strong predictive power, the sensitivity, specificity, capacity, and positive and negative predictive values of IMA were detected to be higher than other studied biomarkers of oxidative stress ***(Ataş et al., 2017).***

In the view that oxidative stress has been linked to vitiligo pathogenesis and disease activity, IMA was detected to be higher in patients with vitiligo, we thought to investigate the serum level of IMA in vitiligo patients and its possible relation to TOS levels and disease activity.

2. AIM OF THE WORK

The aim of this work was to evaluate the serum level of ischemia modified albumin in vitiligo patients and its relation to total oxidant status and disease activity.

Chapter 1

3.1. VITILIGO

Vitiligo is a chronic acquired disease characterized by appearance of circumscribed achromatic macules to patches often associated with leukotrachia in various parts of body, due to progressive destruction and reduction in numbers of melanocytes ***(Varzhapetyan et al., 2019).***

3.1.1. Prevalence:

The prevalence of vitiligo worldwide ranges from 0.5% to 2% of general population without clear preference for race or sex, although women may be more likely to present for treatment because of cosmetic reasons and respond to surveys ***(Bergqvist et al., 2020).***

3.1.2. Pathogenesis:

3.1.8.1. Genetic:

Various studies have found that the frequency of vitiligo among 1st degree relatives varies from 0.14% to as high as 20%, this suggests strong familial tendency ***(Alkhateeb et al., 2003).***

Vitiligo is a poly-genetic disorder. A large scale genome studies have discovered approximately 50 different genetic loci that contribute to vitiligo risk, a large fraction of these genes encode proteins involved in immune regulation, cellular apoptosis and regulation functions of melanocytes ***(Spritz et al., 2017).***