بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

MONA MAGHRABY

Association of serum Zinc Level and Clinical Outcome in Patients with COVID19 Virus

Thesis

Submitted For Partial Fulfillment of Master Degree in Internal Medicine

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List of Abbreviations

Abb.	Full term
ACE2	Angiotensin-converting enzyme 2
AICD	Activation-induced cell death
APCs	Antigen-presenting cells
ARDS	Acute respiratory distress syndrome
AT	Antithrombin
BAL	Bronchioalveolar lavage
COVID-19	Corona virus disease- 2019
CP	Convalescent plasma
CRP	C-reactive protein
CT	Computed tomography
CTLs	Cytotoxic T lymphocytes
DIC	Disseminated intravascular coagulation
DNA	Deoxyribonucleic acid
DVT	Deep vein thrombosis
ECMO	Extra corporeal membrane oxygenation
ELISA	Enzyme-linked immunosorbent assay
ERGIC	Endoplasmic reticulum-golgi intermediate compartment
ESR	Erythrocyte Sedimentation Rate
EV	Epidermodysplasia verruciformis
FDP	Fibrin degradation product
G-CSF	Granulocyte colony-stimulating factor
GI	Gastrointestinal
HFNC	High flow nasal cannula
HIV	Human immunodeficiency virus
HPV	Human papilloma virus

List of Abbreviations Cont…

Abb.	Full term
ICU	Intensive care unit
IFN- alpha	Interferon-alpha
IgG	Immunoglobulin- G
IgM	Immunoglobulin-M
IL-6	Interleukin-6
IMV	Invasive mechanical ventilation
IRFs	Interferon regulatory factors
ISGs	Interferon-stimulated genes
LDH	Lactate dehydrogenase
MAP	Mean arterial pressure
MAVS	Mitochondrial antiviral-signalling protein
MDA5	Melanoma differentiation-associated gene 5
MHC	Major histocompatibility complexes
NF-κB	Nuclear factor-κB
NIH	National Institutes of Health
NIPPV	Non-invasive positive pressure ventilation
NK	Natural killer
NP	Nasopharyngeal
OP	Oropharyngeal
PD1	Programmed cell death protein 1
PPE	Personal protective equipment
PRRs	Pattern recognition receptors
PT	Prothrombin time
PT	Pyrithione
RBD	Receptor-binding domain
RDA	Recommended dietary allowance

List of Abbreviations Cont…

Abb.	Full term
RER	Rough endoplasmic reticulum
RIG-I	Retinoic acidinducible gene I
RT-PCR	Reverse-transcription polymerase chain reaction
SARS-CoV-2	Severe acute respiratory syndrome coronavirus-2
SIC	Sepsis-induced coagulopathy
TH	T helper
TIM3	T cell immunoglobulin mucin-3
TLR	Toll-like receptors
TNF	Tumour necrosis factor
TOM70	The outer mitochondrial membrane 70
VTE	Venous thromboembolism
WBC	White blood cell count
WHO	World Health Organization
Zn	Zinc

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INTRODUCTION

As the whole world is grappling with corona virus disease- 2019 (COVID-19) pandemic caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), there is a frantic race for finding treatment regimens based on current knowledge until effective vaccine and drugs are developed. Indeed, therapeutic approaches against COVID-19, mostly centered on the management of its immunopathology and/or tailored to directly control viral replication, are for now based on off-label prescription. Several human trials are currently in progress to assess the therapeutic indexes of drugs already approved for other diseases (i.e., drug repurposing), and in combination with dietary supplements like vitamin C, vitamin D, vitamin B12, probiotics, and zinc (Zn) ***(Maret, 2013).***

Zinc is an essential trace element that is crucial for growth, development, and the maintenance of immune function. Its influence reaches all organs and cell types, representing an integral component of approximately 10% of the human proteome, and encompassing hundreds of key enzymes and transcription factors. Zinc deficiency is strikingly common. The global prevalence of zinc deficiency is estimated to range from ~17% to 20% ***(Wessells and Brown, 2012; Kumssa et al., 2015)***, with the vast majority occurring in developing countries of Africa and Asia.

Zn is a common theme in both prophylactic and curative COVID-19 clinical studies using nutritional supplements.

Zn, the second most abundant trace metal in the human body after iron, is essential for multiple cellular functions including maintenance of immune health. Importantly, Zn also plays a critical role in antiviral immunity ***(Gupta et al., 2019; Read et al., 2019).***

AIM OF THE WORK

The aims of this study is to assess Possible association between mean levels of Zinc in the patients and clinical outcome caused by COVID-19.