



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY



CORRELATION OF INTRAVENOUS VITAMIN C INJECTION AND PLASMA ALBUMIN LEVEL IN BURNT RATS (EXPIRIMENTAL ANIMAL STUDY)

A thesis

*Submitted for Partial Fulfillment of Master Degree
in Plastic and Maxillofacial Surgery*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قُلْ لِّمَن كَانَ عَدُوٌّ لِّلرَّحْمٰنِ
عَدُوٌّ لِّنَفْسِهِ

صدق الله العظيم

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List of Abbreviations

Abb.	Full term
6S.....	The Scandinavian Starch for Severe Sepsis/Septic Shock
AA.....	Ascorbic acid
ABA	The American Burn Association
ACS.....	Abdominal compartment syndrome
AKI	Acute kidney injury
ALBIOS	Albumin Italian Outcome Sepsis
ARDS.....	Acute respiratory distress syndrome
Bpm	Beats per minute
CHEST	Crystalloid versus Hydroxyethyl Starch
Co.....	Carbon monoxide
CRISTAL.....	Colloids versus Crystalloids for Resuscitation of Critically Ill patients
CT	Computed tomography
DAMPs	Damage Associated Molecular Patterns
FiO ₂	Fraction of inspired oxygen;
GFR	Glomerular filtration rate
HAM	Human amniotic membrane
HBO.....	Hyperbaric oxygen
HSA	Human serum albumin
IAH	Intra-abdominal hypertension
IAP.....	Intra-abdominal pressure
ICU	Intensive care unit
IGF-1	Insulin-like growth factor 1
IL	Interleukin
IVF.....	Intravenous fluid

List of Abbreviations Cont...

Abb.	Full term
KDIGO.....	Kidney Disease: Improving Global Outcomes
LPS	Lipopolysaccharide
MAP	Mean Arterial Pressure
NADPH	Nicotinamide adinadin dinucleotide phosphate
NF- κ B	Nuclear Factor kappa B
NLR	NOD Like Receptors
NOD.....	Nucleotide oligomerization domain
NOS	Nitric oxide synthase
O ₂	Oxygen
PAMPs.....	Pathogen Associated Molecular Patterns
PaO ₂	Partial pressure of arterial oxygen
POC	Point of care
PVR.....	Peripheral vascular resistance
qSOFA.....	Quick SOFA.
ROS.....	Reactive oxygen species
RRT.....	Renal replacement therapy
SOFA	Sequential Organ Failure Assessment
SVR.....	Systemic vascular resistance
TBSA	Total body surface area
TLRs	Toll-like receptors
TNF	Tumor Necrosis Factor
WHO	World Health Organization
XO	Xanthine oxidase

INTRODUCTION

Burn is tissue injury caused by heat, radiation, electricity, contact with hot objects or chemicals. It's a global public health problem accounting for an estimated 180000 death annually according to WHO. Non fatal burns are a leading cause of morbidity including prolonged hospitalization ending with disfigurement and disability. The majority of burns occur in middle and lower income areas (*James et al., 2019*).

Burn is considered a post-traumatic inflammatory disease that causes infection and damage to both local and distant tissues. Tissues respond to burn injury by releasing inflammatory mediators resulting in increased vascular permeability. This leads to shift of intravascular fluid and plasma proteins into the interstitial space resulting in decreased capillary oncotic pressure. The newly extravasated proteins create an osmotic gradient that pulls additional fluid into the interstitial space resulting in edema formation. The peak of edema occurs in the first 8 hours post burn injury thus, those 8 hours are critical in resuscitation of burn patients (*Li et al., 2018*).

Albumin is an exclusive intravascular protein that plays a significant role in our lives. In addition to the key role in the balance of the oncotic pressure, endogenous substances and drugs are transported by binding to albumin. It is also thought that it plays an antioxidant function. Due to this clinical potential, albumin replacement is applied as a volume expander

in burn shock resuscitation and to correct hypoalbuminemia in the chronic period (*Çakırca et al., 2019*).

Ascorbic acid or Vitamin C is a water-soluble micronutrient required for various biological functions. It acts as a cofactor in enzymatic reactions such as collagen synthesis and deposition in vascular endothelium. Vitamin C is also an important antioxidant, eliminating free radicals released from burnt tissues. In addition to that, previous studies have demonstrated the fluid saving effect of high-dose vitamin C (*Rizzo et al., 2016*).

AIM OF THE WORK

Testing the effect of intravenous vitamin C injection on plasma albumin level in burnt rats.