

بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم



جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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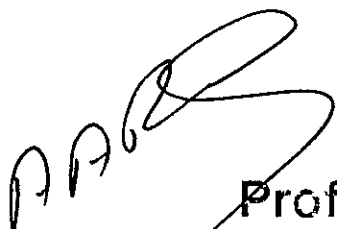
THE VALUE OF MEASUREMENT OF COPPER ZINC, MAGNESIUM AND SELENIUM IN CHRONIC LIVER DISEASES

THESIS

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First of all thanks to God.

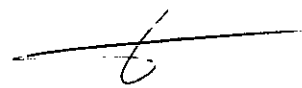
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ABBREVIATIONS

Abs	: Absorbance.
ACTH	: Adreno-corticotropic hormone.
ALT	: Alanine aminotransferase.
ALP	: Alkaline phosphatase.
AST	: Aspartate aminotransferase.
ATPase	: Adenosine Tri-phosphatase.
BSP	: Bromosulphophthalein.
CAH	: Chronic active hepatitis.
ChE	: Cholinesterase.
CNS	: Central nervous system.
CPH	: Chronic persistent hepatitis.
dBSP	: Dibromosulphophthalein.
ECG	: Electro-cardio gram.
EDTA	: Ethylenediaminetetracetic acid.
ELISA	: Enzyme-linked immunosorbent assay.
GC	: Gas chromatography.
GGT	: Gamma glutamyl transferase.
GSH-Px	: Glutathione peroxidase.
HBcAb	: Hepatitis B core antibody.
HBsAg	: Hepatitis B surface antigen.
HCVAb	: Hepatitis C virus antibody.
ICG	: Indocyanine green.
LCAT	: Lecithin cholesterol acyltransferase.
LDH	: Lactate dehydrogenase.
LH	: Luteinizing hormone.
MS	: Mass spectrometry.
NALD	: Non alcoholic liver disease.
p.p.m	: Parts per million.
PTH	: Parathyroid hormone.
RNA	: Ribonucleic acid.
TPN	: Total parenteral nutrition.
TSH	: Thyroid stimulating hormone.
5 -NT	: 5 -nucleotidase.

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INTRODUCTION AND AIM OF THE WORK

INTRODUCTION

Trace elements are those elements which are present in very small amounts in living tissues and cannot be measured by the routine methods (Burch et al., 1975).

Some of these elements are essential for the proper function of various organs in the body, as they enter in the structure of many enzymes, vitamins and hormones. They may also act as activator for many enzymes. Deficiency or excess of any of these essential trace elements will result in different syndromes which are associated with structural, functional and physiological abnormalities in man (Burch et al., 1975).

Serum copper level is significantly elevated in portal cirrhosis, biliary tract diseases and hepatitis (Capocaccia et al., 1991).

In viral hepatitis serum copper level is increased during acute phase (Gorozynske, 1973) and during improvement of the clinical state (Henkin and Smith, 1972).

Zinc level is reduced in serum of cirrhotic patients (Capocaccia et al., 1991).

Zinc deficiency has been involved in the pathogenesis of a number of clinical findings in chronic liver disease. These include the possible role of zinc deficiency in the pathogenesis of hepatic encephalopathy, by inducing alteration in urea metabolism (Capocaccia et al., 1991).

The patients with liver cirrhosis present a significant decrease of serum magnesium levels in comparison to controls (Pasqualetti et al., 1987).

There is a significant correlation between serum magnesium levels and serum levels of albumin and gammaglutamyl transpeptidase (Pasqualetti et al., 1987).

Selenium level in serum is reduced in cirrhotic patients (Capocaccia et al., 1991).

Low selenium level have been involved in the pathogenesis of liver damage as this element is important in controlling the levels of toxic oxygen free radicals in the cells (Capocaccia et al., 1991).

Serum selenium showed a highly significant positive correlation with albumin in both alcoholic liver disease (ALD) and non alcoholic liver disease (NALD) (Thuluvath et al., 1992).

The Aim of The Work

The aim of this study is to measure serum copper, zinc, magnesium and selenium in patients with chronic liver diseases to find out any clinical or biochemical changes.

REVIEW OF LITERATURE

BIOCHEMISTRY OF SOME TRACE ELEMENTS

Elements are classified into trace elements and major elements. Trace elements are essential nutrients and present in minute amount in tissues and blood or frequently described as occurring in "traces". Twenty six naturally occurring elements are known to be essential for animal life (McLaren, 1986).

These consist of 11 major elements, namely carbon, hydrogen, oxygen, nitrogen, sulfur, calcium, phosphorus, potassium, sodium, chlorine, and magnesium, and 15 elements generally accepted as trace elements. These are zinc, copper, manganese, nickel, cobalt, molybdenum, selenium, chromium, iodine, fluorine, tin, silicon, vanadium and arsenic (Forbes and Erdman, 1983).

The essential trace element is present in all healthy tissues of all organisms and its withdrawal produces similar structural and physiological abnormalities in different species, which are prevented or reversed by addition of the element (Forbes and Erdman, 1983).

The mechanisms by which metals functioning in enzyme systems are: 1) direct participation in catalysis,