

Essential Trace Elements in Relation to Anesthesia and Intensive Care

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of the Master Degree in Anesthesia

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﴿سورة البقرة - الآية ٣٢﴾

List of Tables

No.	Table	Page
Table (1) :	Requirements and amounts of trace elements in humans.	4
Table (2) :	Mechanisms and conditions which predispose to dietary and systemic deprivation of zinc.	15

List of Figures

No.	Figure	Page
Figure (1) :	Iodine metabolism and regulation of the thyroid function by the hypothalamus-pituitary-thyroid feedback mechanism.	11
Figure (2) :	Estimate of the prevalence of different types of anemia in the United States.	37
Figure (3) :	The oxyhemoglobin dissociation curve describes the relationship between the SaO_2 and the PO_2	40
Figure (4) :	The hemodynamic effects of increasing doses of halothane were determined in chronically anemic and normal dogs.	41
Figure (5) :	The peak recorded inorganic fluoride concentration increased linearly with the MAC.h of sevoflurane.	64
Figure (6) :	Mean plasma inorganic fluoride concentration-time profile after sevoflurane and halothane in children.	65
Figure (7) :	The area under the plasma inorganic fluoride concentration-time curve increased linearly with the MAC.h of sevoflurane.	66

List of Contents

	PAGE
Introduction	1 - 2
Chapter (1) : Pathophysiological Aspects of Trace Elements.	3 - 34
Iron	5
Iodine	9
Zinc	13
Selenium	19
Copper	23
Fluorine	25
Chromium	27
Molybdenum	30
Cobalt	31
Manganese	32
Nickel	34
Chapter (2) : Trace Elements in Relation to Anesthesia and Critically Ill Patients in ICU.	35 - 73
Iron	37
Iodine	44
Zinc	48
Selenium	53
Copper	59
Fluorine	64
Chromium	69
Molybdenum	71
Cobalt	72
Manganese	73
Conclusion	74 - 75
Summary	76 - 77
References	78 - 93
Arabic Summary	

Introduction

Introduction

Trace elements are inorganic ions present in tissues in a minute quantity, micrograms to picograms per gram of wet organ. The essential trace elements are : iron, copper, selenium, iodine, cobalt, manganese, molybdenum, chromium, fluorine, zinc, and nickel (*Shaw, 1980*).

Less than a decade ago, only seven trace elements were considered essential for man. Today they are about fifteen. Studies have shown that trace elements are important for many enzymes that regulate key metabolic pathways in the human body. Virtually all organs are influenced by trace element deficiencies. Such disturbances in nutrient balance may be primary or secondary to other disease. In both situations, deficiencies can be corrected by appropriate amounts of oral or parenteral supplements. It has also become clear that excessive intake of essential trace elements can result in adverse effects (*Hambidge, 1986*).

Trace element deficiencies present clinically with non-specific features. Perhaps the most frequent feature is weight loss, or in the case of infants and children, is failure to achieve maximal growth (*Hambidge, 1986*). Trace element deficiencies are seldom diagnosed on the basis of clinical features alone. However, they may be suspected in the presence of the right etiological circumstances. Several trace element deficiencies - like zinc, copper, chromium, molybdenum, and perhaps selenium - have been documented in patients maintained on

prolonged intravenous nutrition without adequate trace element supplementation (*Besunder and Smith, 1991*).

Epidemiological evidence suggests that the development of life-threatening diseases, such as cancer and heart diseases, are linked to our dietary intake of trace elements including antioxidants (*Gutteridge, 1994*).

