

MAGNESIUM, TOTAL CALCIUM, PHOSPHORUS, COPPER AND ZINC IN PLASMA OF CORD BLOOD FROM INFANTS OF DIABETIC MOTHERS

Thesis

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LIST OF ABBREVIATIONS

AMP	Adenosine monophosphate
ATP	Adenosine triphosphate
ATPase	Adenosine triphosphatase
Ca	Calcium
Cu	Copper
DM	Diabetes mellitus
EDC	Epidemiology of diabetes complications
g	gram
GFR	Glomerular filtration rate
GTT	Glucose tolerance test
IDDM	Insulin dependant diabetes mellitus
IDM	Infant of diabetic mother
iPTH	Immunoreactive parathyroid hormone
IUGR	Intrauterine growth retardation
Kcal/kg	Kilocalory per kilogram
Kg	Kilogram
LGA	Large for gestational age
µg	Microgram
mEq/L	milliequivalent per litre
Mg	Magnesium
mg	milligram
mg/dl	Milligram per deciliter
mg/ml	milligram per millilitre
mmol	millimol
MSAFP	Maternal serum alpha-fetoprotein
ng/ml	Nanogram per millitre
Ph	Phosphorus

Pi	Inorganic phosphorus
PTHrP	parathyroid hormone related protein
RDA	Recommended Daily/Dietary Allowance
SD	Standard deviation
VLBW	Very low birth weight
WHO	World Health Organization
wk	Week
yr	Year
Zn	Zinc

Introduction

INTRODUCTION

Diabetes Mellitus is an important cause of maternal and perinatal complications. In the literature, there are certain data which indicate that diabetes mellitus affects metabolism of inorganic compounds and trace elements (*Hurley, 1976 and Ratnam and Bhandarkar, 1981*).

Diabetes Mellitus and pregnancy have interrelated effects that can cause both physiological and pathological disturbances in maternal concentrations of macro-and microelement and may lead to fetal variation (*Mimouni et al., 1987 and Mooradian and Morley, 1987*).

Disturbances in metabolism of minerals particularly essential trace elements, in diabetic mothers could cause fetal malformation (*Kuoppola, 1988 and Uriu - Hare et al., 1984*).

The infants of diabetic mothers are at increased risk of major congenital malformation (*Miller et al., 1981*).

Insulin dependant diabetes is associated with magnesium deficiency due to increased urinary magnesium losses (*Atchley, 1933*).

High rates of hypomagnesemia and hypocalcemia have been recorded in infants of insulin dependant diabetic mothers (*Tsang et al., 1976*).

The plasma magnesium and calcium were low in infants of diabetic mothers compared with those for the non diabetic ones (*Speich et al., 1992*).

At birth, plasma zinc values in infants are higher and plasma copper values lower than those of mother. (*Powell-Beard et al., 1987, Bros et al., 1988*). On the other hand, Veena et al. 1991 reported insignificant difference between maternal serum zinc and cord blood levels.