SERUM AND SALIVARY IgA IN BREAST FED AND ARTIFICIALLY FED INFANTS

A Thesis Submitted in Partial Fulfilment of the Requirements for the Master Degree in Paediatrics

By

ASSEM ADIB ABDEL MANAN

Supervised by

PROF. DR. YEHIA EL GAMAL
Professor of Paediatrics
Faculty of Medicine - Ain Shams University

PROF. DR. AIDA ABDEL AZIM ABDEL SALAM
Professor of Clinical Pathology
Faculty of Medicine - Ain Shams University

DR. GALILA M. MOKHTAR KAMAL
Lecturer of Paediatrics
Faculty of Medicine - Ain Shams University

AIN SHAM UNIVERSITY
Faculty of Medicine

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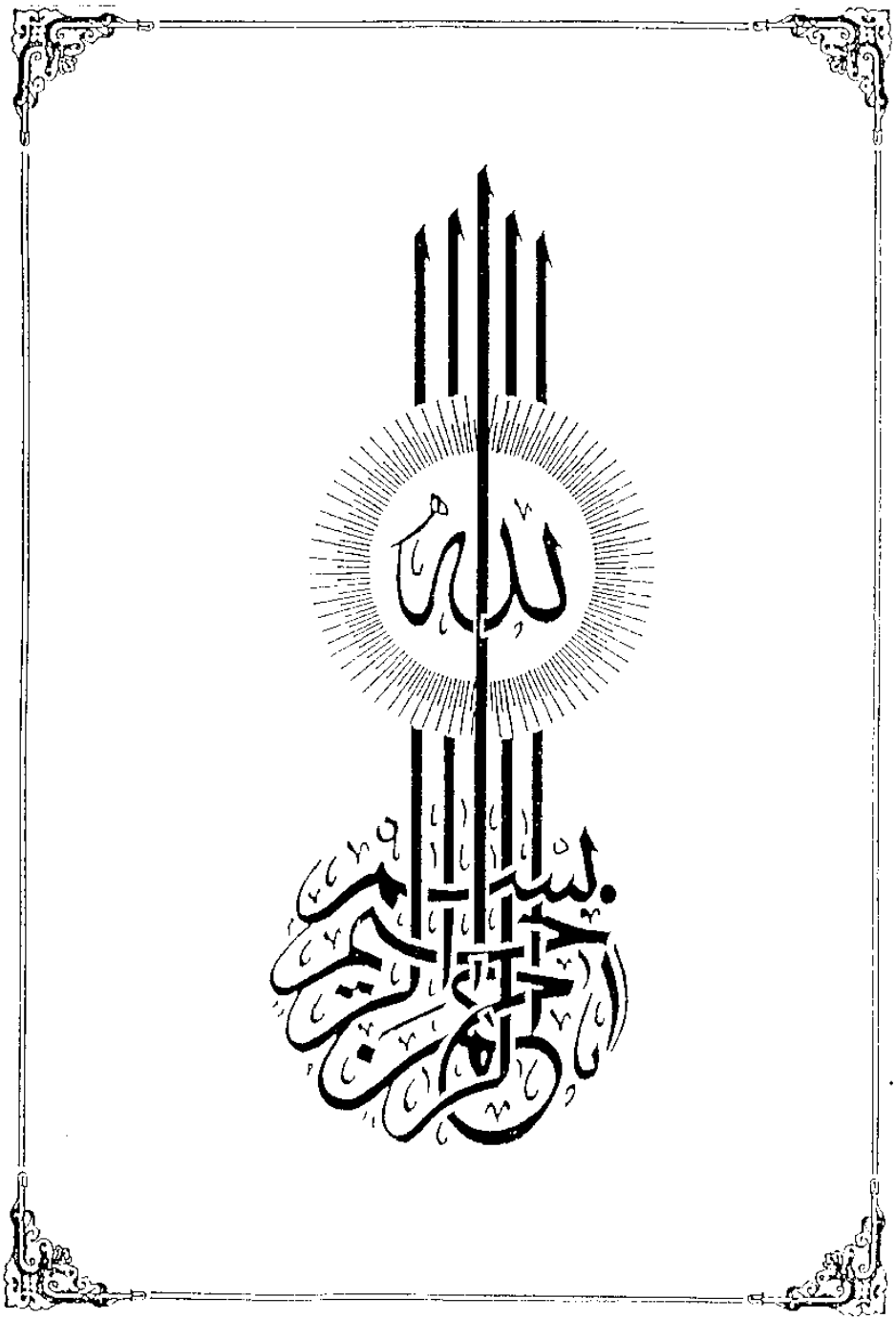
بسم الله الرحمن الرحيم

" قالوا سبحانك لا علم لنا الا ما علمتنا
انك أنت العليم الحكيم "

صدق الله العظيم

سورة البقرة : آية ٣٢



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LIST OF ABBREVIATIONS

BALT	Bronchus Associated Lymphoid Tissue
IgA	Immunoglobulin A
IgD	Immunoglobulin D
IgE	Immunoglobulin E
IgG	Immunoglobulin G
IgM	Immunoglobulin M
MALT	Mucosa Associated Lymphoid Tissue
M.W.	Molecular Weight
P	Probability of Error
r	Correlation Coeficient
RNA	Ribonucleic Acid
SC	Secretory Component
SIgA	Secretory Immunoglobulin A
>	More than
<	Less than

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Breast milk is not merely the best, but a must in the developing world and to the highly vulnerable low birth weight infant. In underprivileged areas, human milk is truely a passport to life (Narayanan, 1986).

Breast milk has a number of advantages, but perhaps the most unique feature, which has not been duplicated even in the latest formulas, is its immunological property. While the presence of anti-infective factors in human milk has been known for some time, their clinical importance has been proved only recently (Narayanan, 1984).

Mother's milk is the ideal source for nutrition and protection for all infants irrespective of their birth weight or gestational age (Chandra, 1982).

Human milk can supply all nutritional needs for optimal growth for at least the first 4-6 months of life provided that the infant is born with adequate fetal stores (Mcelaren and Burman, 1976).

The duration of breast feeding varies considerably in different cultural and socio-economic groups, and is basically a question of convenience, attitude, and

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tradition. Prolonged breast feeding particularly in unprivileged groups, may have many advantages and should therefore be encouraged (Hanson et al., 1983).

Superiority of human milk has many facets; from built in host defence factors and digestive enzymes to a well balanced and uniquely packaged supply of amino-acids, fats, carbohydrates, minerals and vitamins (Lonnerdal, 1985).

Worldwide, no single pediatric decision has such potential for child health, as the return to breast feeding (Jelliffe and Jelliffe, 1975).

The aim of the present study is to estimate both secretory and serum IgA in infants fed with the breast or artificially and to find if there is any correlation or variation between the two groups.

REVIEW OF LITERATURE

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HUMAN BREAST MILK

Types of Breast Milk:

In the first few days after birth, the breast-fed infant ingests a yellowish transparent fluid called colostrum. Between the 3rd and the 6th day, colostrum changes to milk, which has a higher protein content than mature milk and is called transitional milk. By the 10th day, the breast-fed infant receives mature milk (Pipes, 1981).

Colostrum:

The secretion of the breasts during the last days of pregnancy and for the first 2 - 4 days after delivery is termed colostrum. It has a deep lemon yellow colour, alkaline in reaction and its specific gravity is 1040-1060. The total amount secreted daily is 10-40 ml (Barness, 1987).

Colostrum compared with mature milk is more viscous; richer in protein and minerals; and poorer in carbohydrates, fats and many vitamins (Table 1). Colostrum is composed of milk products produced before and after parturition, including whatever cellular components and debris which

TABLE 1

Difference between Colostrum and Mature Human Milk

(Casey, 1983)

Constituent (per 100 ml)	Colostrum 1-5 days	Mature milk 30 days
Emergy (keal)	58	70
Total solids (g)	12.8	12.0
Lactose (g)	5.3	7.3
Total nitrogen (mg)	360	171
Protein nitrogen (mg)	313	129
NPN (mg)	47	42
Total protein (g)	2.3	0.9
Casein (mg)	140	187
&-Lactalbumin (mg)	218	161
Lactoferrin (mg)	330	167
IgA (mg)	364	142
Amino acids (total)		
Alanine (mg)	---	52
Arginine (mg)	126	49
Aspartate (mg)	---	110
Cystine (mg)	---	25
Glutamate (mg)	---	196
Glycine (mg)	---	27
Histidine (mg)	57	31
Isoleucine (mg)	121	67
Leucine (mg)	221	110
Lysine	163	79
Methionine (mg)	33	19
Phenylalanine (mg)	105	44
Proline (mg)	---	89
Serine (mg)	---	54
Threonine (mg)	148	58
Tryptophane (mg)	52	25
Tyrosine (mg)	---	38
Valine (mg)	169	90
Taurine (free) (mg)	---	8
Urea (mg)	10	30
Creatine (mg)	---	3.0
Total fat (g)	2.9	4.2
Fatty acids (% total fat)		
12:0 lauric	1.8	5.8
14:0 myristic	3.8	8.6
16:0 palmitic	26.2	21.0
18:0 stearic	8.8	8.0
18:0 eleic	36.6	35.5
18:2, n-6 linoleic	6.8	7.2