## 2. SUMMARY AND CONCLUSION

This study was carried out in Banha University Hospital and Cairo Faculty of Medicine in 1985 and 1986 .

The aim of the work was to compare the serum levels of the immunoglobulins , IgM , IgG & IgA , and the total lipids , β-lipoprotein and apolipoprotein B in both breast-fed and artificially-fed infants . It was also desirable to find out any significant difference between the two groups in connection with the interrelationship between the immune system and the lipid metabolism that could have a possible bearing on obesity and susceptibility to infection .

The study was conducted on 60 infants of 6 - 12 months old . Half of them were exclusively breast-fed milk and the second half were artificially-fed humanized milk during the first 6 months of life .

IgM, IgG & IgA are measured by the technique of immuno-diffusion using specific antisera . Total lipids were determined by photoelectric colorimetry while β-lipoproteins were measured by electrophoresis and the apolipoprotein B by the immunodiffusion plates .

The blood serum IgM , IgG and IgA levels were found to be significantly higher in the breast-fed group than

in the formulae-fed one . The mean value of serum IgM was 2.41 g/l in breast-fed infants , while it was 1.69 g/l in artificially-fed infants . The mean value of serum IgG was 17.83 g/l in breast-fed infants , while it was 11.58 g/l in artificially-fed infants . Finally , the mean value of serum IgA in both groups , it was 1.31 g/l in breast-fed infants , while it was 0.94 g/l in artificially-fed infants.

On the other hand , the serum levels of total lipids , β-lipoprotein and apolipoprotein B showed a slight but non-significant increase in breast-fed than in artificially-fed infants . The mean value of total lipids was 7.06 g/l in breast-fed infants , while in artificially-fed infants , it was 6.25 g/l . The mean value of β-lipoprotein was 5.41 g/l in breast-fed infants , while it was 4.75 g/l in artificially-fed infants . Finally , the mean value of apolipoprotein B in breast-fed infants was 0.79 g/l , while it was 0.69 g/l in artificially-fed infants .

Some correlative studies were carried out between immunoglobulins and serum lipids . There was a high significant correlation between all immunoglobulin fractions and lipids , β-lipoprotein and apolipoprotein B in the formulae-fed male infants . There were also slightly less but still significant correlations between IgM

fraction and serum lipids , β-lipoprotein and apolipoprotein B in both male and female breast-fed infants .

Our study revealed the following important points :

1- Infants receiving breast milk are superior to formulae-fed infants with regard to their significantly elevated serum immunoglobulin levels . Hence the immunological response to antigenic stimuli and the maturity of their immune system . This is indicative of the highly significant , active and positive role played by human milk in the maturation of the infant's immune system .

2- Inspite of the hypercholesterolemia reported in breast-fed infants , that was taken as a point against human milk as increasing the risk of developing atherosclerosis , hypertension and coronary heart later in life , we have observed that the increase of β-lipoprotein and apolipoprotein B were not significantly raised in breast-fed than in formulae-fed infants .

3- The correlative studies have shown that there is some relationship between the immune system and lipid metabolism in infants . This may have an impact on understanding the significance of the hormonal factors present in human milk and their role in growth and maturation of the developing infants .

From these results we conclude that breast feeding raises the resistance against infection by increasing

the levels of immunoglobulins and the immunity of infants . Breast feeding also protect against obesity and its complications later in life . Therefore , breast feeding should be encouraged as a prophylactic measure against infections and to decrease the morbidity and infant mortality .

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