CHAPTER I

INTRODUCTION AND AIM OF WORK

Zinc is one of the trace elements which is essential for normal growth and development in human beings *[Prasad, 1966]*.

It is well documented that zinc participates with a great deal in many physiological processes in man including its role in metalloenzymes function *[Riordan and Valee, 1976]*, protein and nucleic acid metabolism *[Aggett, 1983]*, hormonal function *[Prasad, 1978]*, immune response *[Aggett, 1985]* and many others.

The effect of zinc deficiency on linear growth was observed by *Prasad (1966)* and correction of this deficiency resulted in acceleration of long bone growth.

Several studies were done on animals that emphasized the effect of zinc on bone growth and development *[Suwarnasarn etal, 1982]*. Other studies reported a relative zinc deficiency in nutritional bone disease in infants i.e. rickets *[El Gamal, 1986]*.

The physiological roles of magnesium are well reported as it acts as an important cofactor in oxidative phosphorylation and all enzyme reactions known to be catalyzed by ATP show an absolute requirement for magnesium *[Aikawa,1976]*; in addition to its role in synthesis and maintenance of nucleic acids *[Clement etal, 1973]*.

Magnesium has got also a great effect on calcium metabolism *[Ganong, 1991]*, parathyroid hormone secretion *[Wallach, 1990]*, vitamin D synthesis *[Fatemi etal, 1991]* and bone development *[Paunier etal, 1992]*.

Although there are some previous studies on zinc and magnesium in rickets, yet we did not find any study on the effect of breast feeding on zinc and magnesium metabolism in rachitic infants.

The aim of our work is to assess zinc and magnesium body status in rachitic infants by estimating the levels of these elements in the serum as well as studying the relation between maternal milk contents of zinc and magnesium and serum zinc and magnesium in breast fed rachitic infants, in addition to the difference in serum zinc and magnesium between breast fed and artificially fed rachitic infants.

Accordingly, forty rachitic infants; along with twenty healthy normal age matched infants were studied in this work.