CHAPTER VII

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This investigation was an attempt to determine the relation between dietary intake and milk composition with regard to protein, fat, lactose, and essential amino-acids.

First, cross-sectional studies were made on the relation between milk levels of the above constituents and the subject's (a) socioeconomic status (b) stage of lactation and (c) dietary intake of fat, protein and carbohydrate.

Next, longitudinal studies were made of the effects of fat and protein supplementation, singly and in combination, and with and without added vitamins. The supplementation was done at initially low levels with progressively increasing doses.

Finally, studies were made on some of the milk enzymes, viz., lipase, esterase, and acid and alkaline phosphatases. The alkaline phosphatase was partially purified and characterised.

The values for fat, protein, and essential amino-acids were found to decrease upto the first month of lactation and to remain fairly steady thereafter. No such change was observed in the case of lactose.

The values with regard to fat, protein, and essential amino-acids were found to be generally lower in the poorer groups studied than the better off classes suggesting a relation between the nutritional status of the subject and the milk levels of these constituents. This suggestion was confirmed by the observation that the milk values for fat, protein and essential amino-acids were found to increase with increases in dietary intake. The correlation between dietary intake and milk level was found to be significant with regard to fat, protein, and three of the amino-acids, viz., histidine, methionine and tryptophan. This increase was, however, found only upto certain levels of dietary intake.

Fat and protein supplementation to subjects of low nutritional status was found to have beneficial effects on milk levels of the respective constituents. The milk contents were found to increase to a ceiling level with the dose supplemented till dietary levels of 50-55 g were reached in regard to either. The increase in protein content was found to be associated with a general increase in essential amino-acid content, the same being significant with regard to histidine, methionine and tryptophan.

Thus the present investigation shows the existence, within certain ranges of dietary intake, of a positive

relation between dietary and milk constitution of fat, protein and essential amino-acids. This observation underscores the posibility that even when lactation is maintained on an inadequate diet the quality of the milk secreted may suffer as a result with detriment to the requirements of infant nutrition, and points to the need for dietary improvement during lactation from the standpoint of both maternal and infant welfare.