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**ANALYSIS OF PROTEINS IN
INFANT MILK FORMULAE**

A PROJECT REPORT PRESENTED

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TO THE

POST GRADUATE INSTITUTE OF SCIENCE

In partial fulfilment of the requirement

For the award of the degree of

MASTER OF SCIENCE

OF THE

UNIVERSITY OF PERADENIYA

SRI LANKA

September 1999

539758

ABSTRACT

ANALYSIS OF PROTEINS IN INFANT MILK FORMULAE

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The composition of individual milk proteins in cow milk infant formulae was studied using standard techniques in analytical chemistry and biochemistry. Infant milk formulae are the preparations recommended for feeding infants from birth to one year. The ten brands of milk formulae studied included, Lactogen formula 1, Lactogen formula 2, SMA, SMA progress, Cow & Gate plus, Cow & Gate premium, Cow & Gate blue, Enfalac, Nan 1 and S-26 which were purchased from sales outlets.

The total proteins, water-soluble and insoluble proteins, casein and whey proteins were analysed qualitatively and quantitatively. The results of these protein analyses were also compared with those of cow's milk and breast milk.

The average total protein contents (g/ 100 ml) of 10 brands of infant formulae, breast milk and cow's milk are Lactogen formula 1 - 1.7, Lactogen formula 2 - 2.9, SMA -1.6, SMA progress -2.2, Cow & Gate plus -1.9, Cow & Gate premium -1.4, Cow & Gate blue-2.6, Enfalac -1.5, Nan 1- 1.5, S^{*}-26 -1.5, breast milk - 1.4 and cow's milk - 3.4.

The water - soluble protein concentration (g/ 100 ml) in the brands of infant milk formulae examined in this study are Lactogen formula 1- 0.70, Lactogen formula 2 -1.06, SMA

-0.72, SMA progress -0.30, Cow & Gate plus -0.27, Cow & Gate premium -1.04, Cow & Gate blue -1.17, Enfalac -0.65, Nan 1-0.55, S-26 -0.90, The average value (g/ 100 ml) of water - soluble protein content for breast milk was 0.90 and for cow's milk was 0.60.

The average values (g/ 100 ml) of water-insoluble protein content are given below. Lactogen formula 1 -1.0, Lactogen formula 2 -1.84, SMA -0.88, SMA progress -1.9, Cow & Gate plus -1.63, Cow & Gate premium -0.36, Cow & Gate blue -1.43, Enfalac -0.85, Nan 1 - 0.95, S-26 -0.60, breast milk -0.50 and cow's milk -2.8.

The average whey protein contents (g/ 100 ml) are as follows. Lactogen formula 1-0.25, Lactogen formula 2- 0.26, SMA - 0.18, SMA progress -0.10, Cow & Gate plus -0.18, Cow & Gate premium -0.31, Cow & Gate blue -0.23, Enfalac -0.18, Nan 1 -0.44, S-26 -0.46, breast milk -0.70 and cow's milk -0.50.

The average values (g/ 100 ml) of casein content for each 10 brands of infant milk formulae, breast milk and cow's milk are listed below. Lactogen formula 1 -1.45, Lactogen formula 2 -2.64, SMA -1.42, SMA progress -2.1, Cow & Gate plus -1.72, Cow & Gate premium -1.09, Cow & Gate blue -2.37, Enfalac -1.32, Nan 1- 1.06, S-26 -1.04, breast milk-0.7 and cow's milk -2.9.

Since the whey proteins (mainly β -lactoglobulin) are mostly responsible for cow milk allergy in infants, a chromatographic method was developed to separate the whey proteins.

This study represents the first comprehensive qualitative and quantitative analysis of milk proteins of commonly used infant milk formulae in Sri Lanka.