

THE BIOTIN CONTENT OF INFANT FORMULATIONS

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At the 1978 Meeting of the Society (Johnson *et al.*, 1978) we proposed that a marginal deficiency in dietary biotin may be a factor contributing to the incidence of Sudden Infant Death Syndrome (SIDS). This conclusion was based on two observations. Firstly, we have shown that the levels of biotin in the liver of infants who had died unexpectedly were lower than in those who had died from explicable causes. Secondly, the similarity of SIDS to Fatty Liver and Kidney Syndrome, which is precipitated by stress when young chickens are fed on a diet which is marginally deficient in biotin (Hood *et al.* 1976). However, we feel that SIDS is not caused by biotin deficiency alone, but biotin insufficiency may leave the infant in a condition such that SIDS can be triggered by another factor (e.g. mild infection, stress).

The level of available biotin in the diet is likely to be an important factor contributing to the incidence of SIDS. Therefore, we have measured the biotin level in human milk and infant formulas from Australia and the United Kingdom.

Formula type or milk	n	ng biotin/g dry matter
Whole milk	3	152 - 359
Skimmed milk	5	54 - 158
Skimmed milk; demineralised whey	4	69 - 163
Soya bean protein	3	146 - 1564
Human milk	17	105 - 389
Cow's milk	9	203 - 416

In general, the levels of biotin were low in formulas based on skimmed milk and demineralised whey as the source of protein. The loss of biotin in these 'humanized formulas' probably occurs during dialysis which is intended to reduce the salt content of cow's milk to a level which is similar to that in human milk. The biotin remaining with the whey protein after dialysis may be present in a bound form and although it can be determined chemically, it may have limited biological availability. Biotin levels in human milk are also variable and the level is increased approximately 35 fold by the addition of 3 mg of biotin per day.

As a result of our work, we feel that infant formulations, particularly so called 'humanized' formulas, should be supplemented with biotin to a level of 250 ng/g of dry matter.

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