A REASSESSMENT OF THE RDI FOR ENERGY DURING LACTATION

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In Australia, the additional energy cost of lactation is estimated to be 2500-2900 kJ/day during the first six months post-partum, with 500 kJ of this coming from fat stores (Warwick 1989). Similar estimates have been made for other Western countries. While there is a lack of extensive longitudinal data which includes a non-pregnant, non-lactating period, it is widely believed that women who are lactating successfully do not typically meet the RDI for energy (for example, Todd and Parnell 1994). This apparent mismatch suggests the need to reassess the various components of the energy equation during lactation. We have examined the two components which have been quantified in order to calculate the additional cost of lactation; the energy value of milk and the energy derived from fat stores mobilised during lactation.

We monitored 20 well-nourished mothers of term singletons at one, three, five and seven months of lactation (17 women completed the study). All were breast-feeding exclusively at one and three months post-partum. Data obtained included 24 h milk yield (corrected for evaporative water loss), anthropometric measurements and milk macronutrient composition. The energy value of milk was determined by summation of the daily outputs of fat, lactose and protein in milk. This was converted to energy cost to the mother by assuming an efficiency of milk synthesis of 80%.

For two-thirds of the women in our study, the energy cost of milk synthesis at one month post-partum was less than 2700 kJ/day. At three months this was the case for one-third of the mothers. The inter-individual CV associated with the 24 hour energy content of milk was approximately 25 % at one and three months.

The mean (range) weight loss between one and three months was 1.0 (-1.2 to 4.0) kg. In addition, our data and that of others, suggest that the mean rate of fat loss during lactation is non-linear, and in fact peaks between three and six months post-partum. Thus the issue of the contribution of maternal fat stores to the energy cost of milk synthesis is complicated by the variability in weight loss between women and the fact that many women in Australia have ceased breast-feeding, at least exclusively, by the time that fat mobilisation appears to be maximal.

The data presented here highlight the variability associated with both the energy content of milk and the availability of energy from fat stores. We conclude that this variability makes it both impractical and inappropriate to provide a universal prescriptive recommendation for energy intake during lactation and suggest a revision that addresses desirable weight outcome as well as the need for nutrient dense foods.

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