

Human Milk Fortifier vs. Formula

In their paper Mukhopadhyay, *et al.*(1) have demonstrated that breast milk fortifiers help small SGA babies in India. It is well known that fortification of breast milk, with added calories and proteins, helps growth in preterm babies(2). The cost of human milk fortifiers (HMF) is however prohibitive. 1.2 g of ordinary term formula-milk-powder contains the same nutrients as 2 g of HMF (**Table I**), except for the calcium content (which can be supplemented easily). The cost of 1.2 g of term-formula-milk powder is Rs 0.38 while the cost of HMF with the same calorie content is Rs 6. We have been using formula milk to fortify breast milk in our preterm babies for over some years now. An accurate measuring spoon to measure 1.2 g of formula and ordinary formula milk is all that is required to enhance breast milk.

TABLE I HUMAN MILK FORTIFIER (HMF) *vs.* TERM FORMULA

	HMF (2 g)	Term formula (1.2 g Dulac)
Calories	6.5	6.5
Fat (g)	0.1	0.33
Sodium (mg)	1.75	1.68
Potassium (mg)	3.9	5.6
Manganese (μ g)	1.7	1.0
Zinc (mg)	0.18	0.36
Calcium (mg)	50.0	4.8
Cost	Rs 6.0	Rs 0.38

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Reply

We appreciate your concern about cost of HMF in our country and using term formula as an alternate option. However, the aim of fortifying feeds of premature babies is not only calorie but to increase the protein supplements for these babies. In term formula the protein content is quite low (1.3-1.5 g/100 mL). Hence they would provide much less protein as compared to a standard fortifier (**Table I**). We agree that there are other HMF preparations in the market which contain nearly double the amount of protein used by us. However it would still contain more protein than the term formula.

There are no randomized controlled trials of using term formula as compared to commercial fortifier though we found 2 studies which used preterm formula(1,2). Gross, *et al.*(1) used simlac special care formula (67 kcal/dL and protein 1.8 g/dL and high mineral content) and did not find any extra benefit. The protein content of the formula fortified feed was quite similar to unfortified milk. In phase 2 of this study they used commercial fortifier and these babies had better weight gain than unfortified and formula fortified feed. However, this study had very less number of patients, 8-10 in each group. Zuckerman and Pettifer(2) used equal volume of preterm formula (Alprem, Nestle) to provide calcium 14.5 mg, phosphorus 7 mg and protein 0.6 mg per 100 mL *vs.* unsupplemented human milk. Short term growth and serum mineral levels were similar. Periosteal reaction and osteopenia had similar prevalence in both the groups. Another concern will be to use formula from an open tin for a very prolonged period and chances of increased contamination.

TABLE I HUMAN MILK FORTIFIER (HMF) *vs.* TERM FORMULA

Composition	HMF (2 g)	Term formula (1.2 g Dulac)
Kcal	6.5	6.5
Protein (g)	0.2	0.12
Fat (g)	0.1	0.33
Carbohydrate	1.2	0.68

CORRESPONDENCE

To conclude, protein is very important component of fortifier to improve growth of preterm babies and probably in SGA babies as they are deficient in muscles. To calculate and measure the exact volume and various components from formula will be a practically difficult task given the varieties of formula available in the market. Commercial HMFs are well planned and well tested, however the cost definitely remains an issue.

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