



The effect of goat milk formula on weight gain and wellness of Thai infants with poor weight gain

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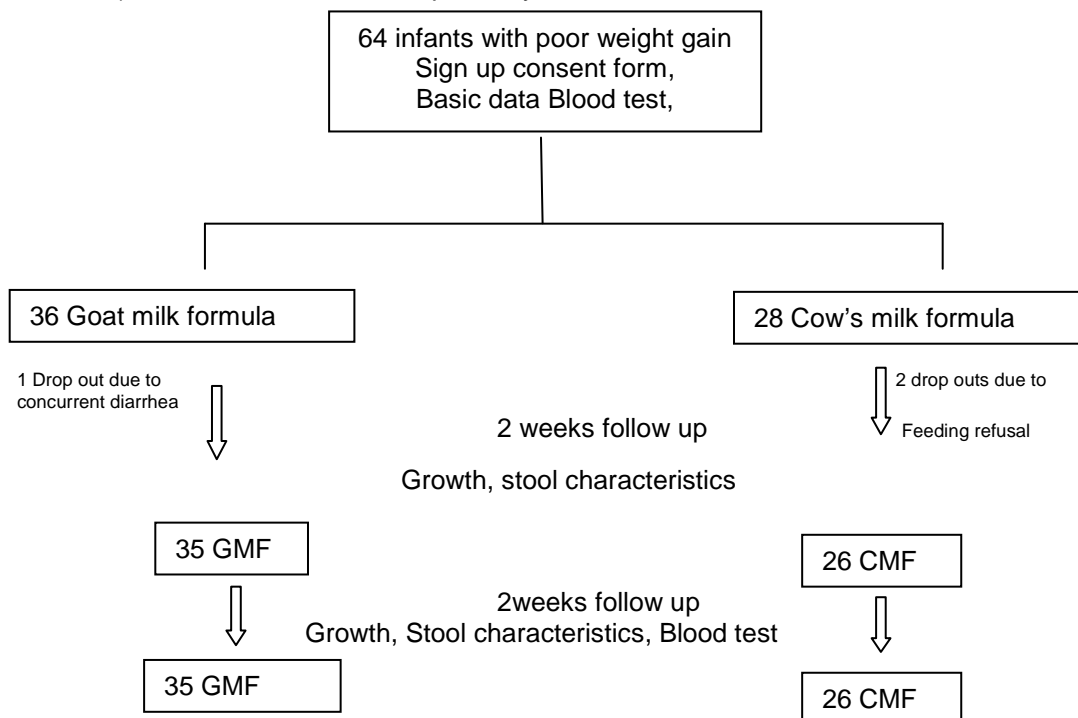
Introduction: Goat milk follow-on formula is an alternative to cow milk for supplementary feeding of infants. Goat milk contains different fatty acids and proteins, with more medium chain fatty acids and less alpha s1-casein than cow milk.

Objectives: To compare goat and cow milk follow-on formula on

1. rate of weight gain
2. acceptance of formula
3. blood ghrelin, cholesterol, triglyceride, folate and iron status in infants with delayed growth.

Methods:

A multicenter, double-blinded randomised trial. Non-breast fed infants with weight gain less than 360 g per month at age 6-13 month or less than 240 g at 14-23 month enrolled with parental informed consent at Pediatric GI Clinic of three University Medical Schools in Thailand. The infants were randomized to goat milk follow-on formula (GMF; DG-2, Pacific Healthcare, Thailand) or cow milk follow-on formula (CMF; Similac Gain Advance, Abbott, Thailand), at 20 and 19 Cal/Oz, respectively, for 4 weeks.

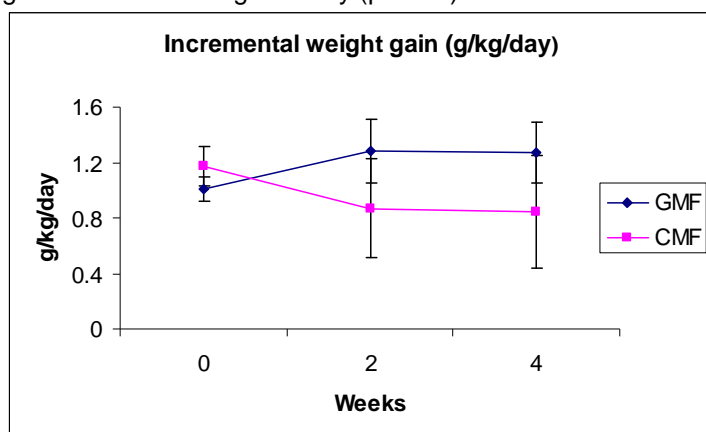


Results:

Weight gain

90% of infants were below the 25th percentile for weight for age at enrolment.

The average caloric intake was 74 kcal/kg/day for GMF and 77 kcal/kg/day for CMF. Weight gain did not differ significantly (p=0.43) between the two milk groups:



Formula tolerance

Tolerance (as measured by bowel motion and Bristol Stool Score) was not significantly different.

	Weeks	GMF		CMF		P values
		mean	SD	mean	SD	
Bowel Motions per day	0	1.5	0.7	1.5	0.6	0.78
	2	1.5	0.6	1.6	0.7	
	4	1.5	0.8	1.6	0.9	
Bristol stool score	0	3.9	1.1	4.0	1.5	0.15
	2	4.2	1.5	5.0	1.3	
	4	4.4	1.3	5.0	1.1	

Serum parameters

Most serum parameters, except for iron, were not significantly different between GMF or CMF.

The proportion of infants with higher serum folate was greater for GMF compared with CMF (10/35 vs. 1/26, p=0.017).

	Weeks	GMF		CMF		P values
		mean	SD	mean	SD	
HDL (mg/dl)	0	44	17	42	17	0.23
	4	47	17	51	22	
Cholesterol (mg/dl)	0	164	38	162	24	0.39
	4	160	44	150	30	
Triglycerides (mg/dl)	0	117	70	129	49	0.56
	4	120	63	136	72	
Ghrelin (pg/ml)	0	63	28	58	18	0.85
	4	62	31	58	20	
Hb (g/dl)	0	11.1	1.5	11.2	1.1	0.36
	4	11.2	1.3	10.9	0.9	
Iron (ug/dl)	0	65	27	64	20	0.06
	4	60	21	46	17	
Ferritin (ng/ml)	0	40	18	46	21	0.42
	4	35	21	45	26	
TIBC (ug/dl)	0	376	150	360	46	0.50
	4	395	122	354	57	
Blood Urea Nitrogen	0	21	20	18	6	0.24
	4	19	7	20	10	

Conclusions:

- GMF infant formula is well accepted with good tolerance by infants and can be used as a supplement for normal or poor weight gain infant without substantial adverse effects.
- Natural fatty acids in GMF maintained appropriate serum lipid profile in comparison to adding CMF with added DHA/ARA.
- The positive iron and folate status in GMF infant formula needs further study in larger sample size to conclude the beneficial effect.

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