



MILK *and*
dairy products
in human nutrition



TABLE 3.2 (continued)

Vitamins	Human Average	Cow Average	Range	Buffalo Average	Range	Goat Average	Range	Sheep Average	Range	Daily RN ¹ for children, 1-3 yr
Riboflavin (mg) (vit B ₂)	0.04	0.20	0.17-0.20	0.11	0.13	0.04-0.18	0.34	0.32-0.36	0.5 mg	
Niacin (mg)	0.18	0.13	0.09-0.20	0.17	0.24	0.10-0.30	0.41	0.40-0.42	6* mg	
Niacin equivalent (mg)		0.79	0.70-0.80		1.00	1.00-1.00				
Pantothenic acid (mg)	0.22	0.43	0.34-0.58	0.15	0.30	0.31-0.41	0.43	0.41-0.45	2.0 mg	
Vitamin B ₆ (mg)		0.04	0.03-0.06	0.33	0.05	0.05-0.06	0.07	0.06-0.08	0.5 mg	
Folate (μg)	5.0	8.5	5.0-8.0	0.6	1.0	Tr-1.0	6.0	5.0-7.0	150 μg	
Biotin (μg)		2.0	1.4-2.5	13.0	2.5	2.0-3.0	2.5	2.5-2.5	8.0 μg	
Vitamin B ₁₂ (μg)	0.05	0.51	0.25-0.90	0.40	0.07	0.04-0.10	0.66	0.60-0.71	0.9 μg	
Vitamin C (mg)	5.0	1.0	0.0-2.0	2.5	1.1	1.0-1.3	4.6	4.2-5.0	30 mg	
Vitamin D (μg)	0.1	0.2	0.1-0.3		0.1	0.1-0.1	0.2	0.2-0.2	5 μg	

* The number of data points varied. Blank spaces indicate that no data were available. See Table 3.1 footnote for data sources.

¹ Recommended nutrient intake values from FAO and WHO, 2002.

² Although some papers, e.g. Park et al. (2007), say that goats convert all β-carotene to vitamin A, resulting in caprine milk being whiter than bovine milk, some of the above databases reported values for β-carotene in goat milk.

RE: retinol equivalents in μg = μg retinol + 1/6 μg β-carotene + 1/12 μg other provitamin A carotenoids; Tr: traces.

TABLE 3.2
Vitamin and mineral composition of human, cow, buffalo, goat and sheep milks (per 100 g of milk)*

	Human Average	Cow Average	Range	Buffalo Average	Range	Goat Average	Range	Sheep Average	Range	Daily RN ¹ for children, 1-3 yr
<i>Minerals</i>										
Calcium (mg)	32	112	91-120	191	147-220	118	100-134	190	170-207	500 mg
Iron (mg)	Tr	0.1	Tr-0.2	0.2	0.3	Tr-0.6	0.1	Tr-0.1	5 mg (12% bioavailability)	
Magnesium (mg)	3	11	10-11	12	2-16	14	13-14	18		60 mg
Phosphorus (mg)	14	91	84-95	185	102-293	100.4	90-111	144	123-158	
Potassium (mg)	51	145	132-155	112	202	170-228	148	120-187		
Sodium (mg)	17	42	38-45	47	44	32-50	39	30-44		
Zinc (mg)	0.2	0.4	0.3-0.4	0.5	0.3	0.1-0.5	0.6	0.5-0.7	4.1 mg (Moderate bioavailability)	
Copper (mg)	0.1	Tr	Tr-Tr		Tr	Tr-0.1	0.1	0.1-0.1		
Selenium (µg)	1.8	1.8	1.0-3.7		1.1	0.7-1.4	1.7		17 µg	
Manganese (µg)	8	4-10		18	Tr-18	18	Tr-18			
<i>Vitamins</i>										
Retinol (µg)	60	35	29-45	69	45	35-56	64	44-83		
Carotene (µg)	7	16	7-23		13	Tr-18 ²	Tr			
Vitamin A (µg RE)	61	37	30-46	69	48	30-74	64			
Vitamin E (mg)	0.08	0.08	0.07-0.08	0.19	0.19-2.0	0.05	0.03-0.07	0.11	0.11-0.11	
Thiamin (mg)	0.01	0.04	0.02-0.04	0.05	0.06	0.03-0.09	0.07	0.07-0.08	0.5 mg	

Mean
requirement:
400 µg RE