New Zealand Sheep Milk

Nutritional Composition

Sheep milk is known as a nutritionally superior alternative to cow milk. The nutritional benefits of sheep milk are due to its composition since it generally contains higher levels of major nutrients such as protein, fat, carbohydrates, minerals and certain vitamins compared with cow milk. The higher total solids of sheep milk also offer the technological advantages of higher cheese yields and higher nutrient densities in a variety of sheep milk products.

On average, sheep milk has higher levels of protein and twice the fat content of cow or goat milk.

The protein in sheep milk is more readily digested compared with cow milk. Sheep milk is also a better source of essential amino acids than cow milk.

Sheep milk delivers more of the branched-chain amino acids leucine, valine and isoleucine than cow milk. These branched-chain amino acids are important for muscle protein synthesis and assist faster muscle recovery.

Sheep milk also contains higher levels of several beneficial lipids such as medium chain triacylglycerols (MCTs), polyunsaturated fatty acids (PUFAs) and phospholipids, compared with cow milk. These lipids can help increase metabolism and energy balance, confer resistance to infections, and maintain human gut health and cognitive functions.

Sheep milk contains similar levels of lactose to cow or goat milk.

Mineral elements such as Ca, P, Fe, and Mg are also high in sheep milk. Minerals are key to the maintenance of human metabolism. They interact with proteins providing essential functions, such as Fe in haemoglobin involved in oxygen transport, and Ca and P involved in bone strength.

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For more information please contact:

Li Day

li.day@agresearch.co.nz

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www.agresearch.co.nz

Component	NZ Sheep Milk * Range	NZ Sheep Milk * Average	Cow milk **
Water (%, by difference)	78.3 – 84.7	81.9	86.4 – 87.8
Total protein (%)	4.1 – 11.2	6.2	3.3 – 3.9
Casein	3.3 – 8.9	47	2.6 – 2.8
Whey	0.82 – 2.24	1.24	0.55 – 0.70
Non-protein nitrogen	0.04 – 0.05	0.046	0.03 – 0.04
Fat/Lipids (%)	3.8 – 16.8	6.7	4.6 – 5.3
Phospholipids (% total)	0.03 – 0.12	0.053	0.03 – 0.04
Phospholipids (mg/100mL)	29.6 – 120.1	55.1	20.3
MCT (<36 carbons % total)	26 – 59	43	16 – 28
Saturated FA (mol % total)	63 – 79	72	75 – 79
Medium chain FA (mol % total)	7.9 – 23	15.4	9.6 – 10.9
Total PUFA (mol% total)	2.5 – 6.6	4.4	2.2 – 2.5
Lactose	3.4 – 5.6	4.8	4.6 – 5.2
Ash	0.89 – 0.93	0.91	0.7 – 0.8
Total solids	12.4 – 32.4	18.1	11.8 – 13.0
Mineral (mg/100mL)			
Ca	70 – 285	193	114
P	57 – 232	157	87
K	72– 203	126	106 – 163
Mg	7 – 45	20	7 – 12
Fe	0.02 – 0.18	0.05	0.03 – 0.1
Na	20 – 137	52	58
Vitamin (µg/100mL milk)			
A – Retinol	38 – 158	83	84
B_1 – Thiamine	26 – 64	52	100
B_2 – Riboflavin	260 – 530	406	200
B_3 – Niacin	250 – 370	300	110
B_5 – Pantothenic acid	383 – 554	462	260 – 490
B_6 - Pyridoxine	15 – 20	18	30 – 70
B_{12}	0.29 – 1.33	0.68	0.27 – 0.7
K	0.22 – 0.8	0.43	1.1 – 3.2
C	1000 – 3600	2100	2000

* NZ sheep milk experimentally derived from vat and individual milk samples (>400) collected Lactation seasons 2014-2017.

** Adapted from NZ and international data.

MCT Medium chain triglycerides

FA Fatty acids

PUFA Polyunsaturated fatty acids