

Calcium Sources

Calcium Bio-availability of Different Organic and Inorganic Dietary Ca Sources

	Citrate	Lactate	Acetate	CaCO3	Chicken Eggshell	Emu Eggshell	CA(P04)2
Calcium Intake (mg/d)	31.17	31.02	30.46	33.50	33.27	38.50	31.20
Faecal Ca Total (mg/d)	.58	.82	.64	1.04	1.61	N/A	1.78
Endogenous (mg/d)	.19	.29	.21	.25	.36	N/A	1.78
Urinary Ca (mg/d)	.19	.29	.21	.25	.36	N/A	1.94
Calcium Retention (mg/d)	28.99	29.48	29.15	31.71	30.83	34.56	28.48
Absorption							
Apparent (% intake)	98.10	97.40	97.90	96.90	95.20	97.50	94.30
True (% intake)	98.80	98.30	98.60	97.70	96.30	98.80	94.90
Immediate Utilization %	98.10	97.80	97.90	97.60	97.60	98.15	97.00
Bioavailability	96.80	96.00	96.80	95.30	93.80	97.00	92.00

CaCO3 = Calcium Carbonate (Oyster Shell), ca (P04)2 = Calcium Phosphate

Reference Source:

Bao SF, Windisch W. Kirchgessner M.: Calcium bio-availability of different organic dietary sources (citrate, lactate, acetate, oyster-shell, egg shell, Emu egg shell, calcium phosphate), in Journal of Animal Physiology and Animal Nutrition, 78 (1997), 154-160.

Abstract:

In a 2-week metabolic study with CA-Labeled growing rats, each of six groups of 10 animals were fed restrictively a semi-synthetic purified diet supplemented with Calcium Citrate, Calcium lactate, calcium acetate, oyster-shell meal, egg shell meal, emu egg shell powder, or calcium phosphate. The total dietary contents of Ca, P and Mg were uniformly 2.8, 5.3, and 0.65g/kg. True absorption, intermediate utilization and bio-availability was uniform for Ca citrate, lactate and acetate (average 98.6, 97.9 and 96.5%). Oyster shell revealed only slightly lower values (97.7, 97.6 and 95.2%). Egg shell and calcium phosphate were lower in bio-availability (93.8 and 92.0) because of a reduced true absorption (96.3 and 94.9%) and in the case of calcium phosphate also due to a slightly reduced intermediate utilization. (97.0%). Emu egg shell tests were done by an alternate source, (Regal Labs, Delta, B.C., 1998), to compare to information already published. No abstract is available, although the comparison look very good.

In total, all tested calcium sources revealed an extremely high absorbability and utilizability. Thus, the chemical formulation of dietary calcium does not seem to be the primary factor of CA bio-availability in practical diets.