

# Why consuming milk and other dairy products is a better way to meet calcium needs than using calcium supplements

**A**dequate dietary calcium intake is needed for optimal bone health throughout the life stages. Self-imposed restriction of milk has been associated with reduced bone mineralisation, increased risk of fracture, and shorter stature. It is difficult to meet calcium recommendations when dairy intake is reduced, while still meeting requirements for other nutrients. Food, especially milk and dairy products, is considered the preferred source of calcium compared to supplements to meet calcium requirements.<sup>1,2</sup>

## Why is it better to get calcium from dairy products, rather than from supplement sources?

Calcium in milk differs favourably from calcium in other foodstuffs or supplements and these differences are important with regard to absorption in unfavourable physiological conditions.

- Prolonged absorption: milk calcium, which is bound to peptides and proteins, is more likely to remain in solution when the pH is unfavourable, such as achlorhydria (absence of hydrochloric acid in the gastric secretions of the stomach).<sup>3</sup>
- Alternate absorption: milk calcium can be absorbed in the absence of vitamin D, under the influence of lactase in the distal small intestine via the paracellular route.<sup>3</sup>
- Protected absorbability: dairy products do not contain anything likely to inhibit the intestinal absorption of calcium.<sup>3</sup>
- Meal effect: milk and dairy products provide an almost complete diet, providing several additional essential nutrients for optimal bone health and human development. Low-calcium diets are therefore generally characterised by low levels of other essential nutrients as well, such as potassium and magnesium. By consuming dairy products, the overall nutritional quality of the diet is therefore improved.<sup>1,3</sup>

## Supplements as a source of calcium

Calcium in supplement form is present in various compounds, including calcium carbonate, citrate, citrate malate, phosphate, gluconate, lactate, and calcium from dolomite (calcium magnesium carbonate) or bone-meal, with carbonate and calcium citrate the compounds of choice. The percentage of elemental calcium provided by these different sources range from 9% (calcium gluconate) to 40% (calcium carbonate).<sup>1,4</sup> Calcium is best absorbed in doses of 500 mg or less, and taken in multiple doses (four times per day) to lower parathyroid hormone levels and decrease bone resorption.<sup>4</sup>

Calcium supplements are available as capsules, tablets, chews, wafers, powders and liquids. These supplements might be required by individuals who do not consume calcium-rich foods, either by choice or necessity. When considering calcium supplementation, the presence of achlorhydria, bioavailability of the calcium, number of tablets needed to achieve the desired dose, size of tablet, the calcium compound, and cost should be considered.<sup>4</sup> The most important factor however to consider, is the potential side effects and/or toxicity associated with calcium supplementation, especially with excessive intakes.

- Gastrointestinal side effects: constipation, gas, flatulence and bloating<sup>4</sup>
- Exposure to toxic metals due to contamination of bone-meal or dolomite supplements with cadmium, mercury, arsenic or lead<sup>5</sup>
- Kidney stones in calcium intakes close to 2000 mg/d<sup>4</sup>
- Increased risk for advanced and fatal prostate cancer at intakes >1500 mg/d<sup>4</sup>
- Hypercalcaemia in calcium intakes close to 2000 mg/d, especially with high vitamin D intakes (e.g. ingestion-combined supplements of calcium and vitamin D)<sup>6</sup>
- Excessive calcification in soft tissue, especially the kidneys, with an intake of  $\geq 2000$  mg/day<sup>4</sup>
- The increased risk of cardiovascular disease<sup>7</sup>
- Possible drug and nutrient interactions as listed on [www.rediscoverdairy.co.za](http://www.rediscoverdairy.co.za) under Download Centre for Health Professionals.

## Milk-based nutritional supplements

In addition to milk being a high-calcium food source, it has the additional benefits of being implemented as a vehicle for nutritional supplementation aimed at maternal and child nutrition, sport nutrition as well as oral nutritional supplements in the clinical setting. Oral nutritional supplements can improve or maintain the nutritional status of malnourished patients with cancer and other disease conditions. The palatability of a high-calorie oral supplement is an important factor in ensuring successful implementation and long-term compliance. Milk-based nutritional supplements have been found to be preferred above non-milk-based supplements, including sweet and salty fruit-juice-type products among people without cancer, patients with gastrointestinal cancer, as well as malnourished patients.<sup>8,9</sup>

## How could calcium consumption be increased in the diet?

Calcium consumption is influenced by various psychological, physiological and environmental factors.

**Addressing the following potential problems** could assist in meeting calcium requirements without risk of calcium toxicity or under-consumption of other essential nutrients:

- ✓ **Substitution of milk with soft drinks.**
- ✓ **Eating away from home** results in consumption of foods with a lower calcium density.
- ✓ **Poor parental (and peer) influence** could contribute to children making food decisions consistent with a reduction of calcium intake.
- ✓ **Skipping meals**, especially breakfast, may limit calcium intake and compromise overall diet quality.
- ✓ **Poor knowledge and negative attitudes** towards dairy. Addressing calcium's health benefits, recommendations and personal intake could result in a behavioural change to improve calcium intake.
- ✓ **Weight and fat concerns** as a result of the misperception that all dairy foods are fattening.
- ✓ **Taste** is the primary factor influencing the intake of dairy foods. Raising the awareness of the wide variety of dairy products available in different forms and flavours to satisfy different preferences, could contribute to higher calcium intakes.
- ✓ **Lactose intolerance.** Gradually increasing intake of lactose-containing foods can improve tolerance to lactose.

## CONCLUSION

Consumption of calcium-rich foods, specifically dairy, is the preferred manner to achieve optimal calcium intakes. Calcium supplements should be an addition to, and not a substitute for foods naturally containing calcium. Individuals who choose to meet their calcium requirements through calcium-fortified foods, which are usually characterised by a low density of other nutrients, and/or via calcium supplementation, should ensure that their requirements for other nutrients are also met.<sup>1</sup> The adequate consumption of milk and other dairy products is an easy way of obtaining an adequate calcium intake, while also increasing the nutritional quality of your diet.

## REFERENCES

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