

Embracing a sustainable future

Nutrition profile of plant-based dairy alternatives in Europe



Plant-based drinks

250ml Median (range) nutritional values per serving (n=249)

Saturated fat
0.5g (0-2.3g)
 All varieties except coconut
 Coconut at **2.8g** (0.3-7.8g)

Protein
7.8g (5-9.8g) **Soya**
 All other varieties **1.5g** (0-5g)

Energy
98kcal (30-178kcal)
 Almond drinks have the lowest cal

Total sugars
5.5g (0-17.5g)
 All varieties except rice
 Rice at **16g** (0-22.8g)
 Little difference between sweetened and unsweetened

Micronutrients in non-organic variants* (n=154)

Calcium
300mg (0-463mg) **80%** fortified

Iodine
0µg (0-90µg) **12%** fortified

Vitamin D
1.88µg (0-3.75µg) **71%** fortified

Vitamin B2
0.25mg (0-1.25mg) **50%** fortified

Vitamin B12
0.95µg (0-1.73µg) **64%** fortified



Plant-based alternatives to yogurt#

150g Median (range) nutritional values per serving (n=60)

Saturated fat
0.6g (0.2-1.2g)
 All varieties except coconut
 Coconut at **7.7g** (1.7-22.5g)

Protein
6.4g (5-9g) **Soya**
 All other varieties **1.5g** (0.6-6.8g)

Energy
117kcal (59-260kcal)
 Varied significantly

Total sugars
 Unsweetened (68%): **0.8g** (0-8.7g)
 Sweetened: **6.8g** (0.6-18.8g)

Micronutrients in non-organic variants* (n=47)

Calcium
180mg (0-240mg) **62%** fortified

Iodine
0µg (0-34µg) **9%** fortified

Vitamin D
0µg (0-2.25µg) **49%** fortified

Vitamin B2
0mg (0-0.4mg) **21%** fortified

Vitamin B12
0µg (0-0.9µg) **47%** fortified

* European organic food regulations do not permit fortification of organic plant-based dairy alternatives and therefore they have been excluded from our micronutrient analysis. # including Greek-style varieties

Nutritional adequacy of plant-based dairy alternatives (PBDA)



Energy
 The energy value of plant-based drinks (PBD) was comparable to semi-skimmed milk. For plant-based alternatives to yogurt (PBAY), excluding coconut-based varieties, energy values were comparable to those of low-fat yogurts.

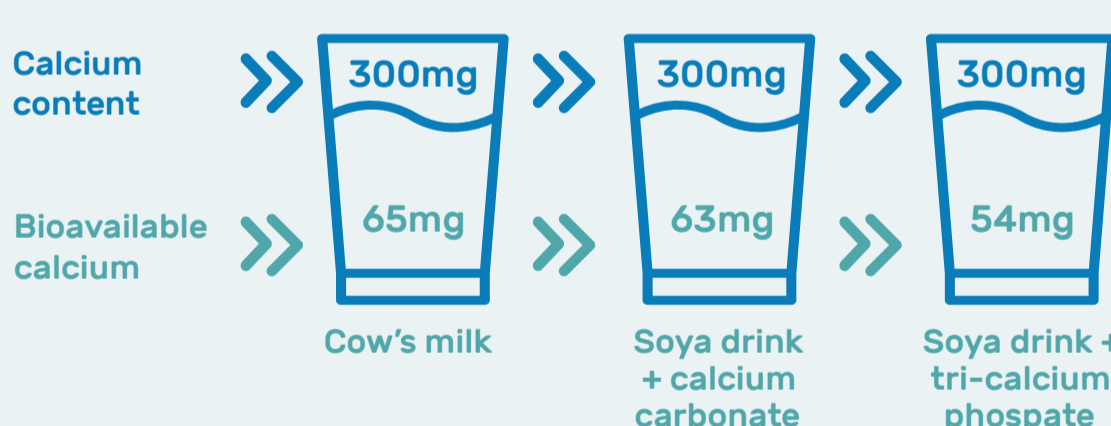
Sugars
 The majority (70%) of PBDA were unsweetened. For the majority of PBD, there was little difference in total sugars between sweetened and unsweetened varieties. PBDA's total sugars levels were comparable or lower than dairy, with the exception of rice PBD.

Saturated fat
 PBDA were low in saturated fat with the exception of coconut varieties.

Protein
 Soya and some pea protein PBDA have the same protein and amino acid profile as their dairy counterparts.
 Other non-soya PBDA contain lower protein and amino acid levels, but within a typical Western mixed diet that includes various protein sources, overall protein intake is higher than recommended. Therefore, their lower protein content is unlikely to affect protein adequacy in healthy individuals.
 Non-soya PBDA do not match the amino acid profile of dairy. However, **in developed countries with diverse food sources, this has little relevance to overall amino acid adequacy**, as nitrogen balance relies on amino acid intake from a variety of foods eaten over the course of the day, rather than relying on a single food or meal.

Micronutrients in non-organic variants*

Calcium per 250ml serving



"Calcium from fortified plant-based drinks is typically absorbed at a rate similar to cow's milk."

Calcium is the most common fortification added to 76% of PBDA. Studies have demonstrated marginal differences in calcium bioavailability between dairy and fortified PBDA. One study found calcium bioavailability to be 21.7%, 21.1%, and 18.1% for cow's milk and soya drinks fortified with calcium carbonate or tricalcium phosphate, respectively. This translates to a minimal difference of 2-11 mg in bioavailable calcium for a 250 mL serving¹. Whether this difference is physiologically significant remains unclear.

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Iodine

Natural iodine-rich foods are few. Dairy is a significant iodine source in European countries where cattle fodder is fortified. For those countries, it would seem prudent for more PBDA to be fortified with iodine. Currently, few (11%) of non-organic PBDA are fortified.

Vitamin B12

A significant proportion (66%) of PBDA are fortified with vitamin B12. Unless an individual chooses to avoid all animal foods from the diet, which is not the usual PBDA consumer, vitamin B12 should not be an issue.

Vitamin D

The second most common fortification in European PBDA: 71% of PBD and half of PBAY. It's essential to note that dairy is not a natural source of vitamin D and is not commonly fortified in Europe, except for a handful of countries like Sweden, Norway, Finland, Belgium, and Spain.

Vitamin B2

Milk is a key source due to its prominence in the diet. 43% of PBDA are fortified with this vitamin. Vitamin B2 deficiency is not a concern in Europe, as a diverse and healthy diet typically provides sufficient quantities.

Other

Total fat levels were generally comparable to lower-fat dairy. Fibre levels in PBDA were relatively low, with most products containing a maximum of 2g per serving. Despite some criticism for added salt, 98% of PBDA products contained less than 0.3g per 100g/ml, similar to levels found in dairy products.

SUMMARY

Fortified PBDA can support the transition toward more sustainable diets and are aligned with current national Food Based Dietary Guidelines.

They generally provide low-saturated fat (except coconut-based products) and have energy and total sugar levels comparable to dairy. Although non-soya PBDA contain less protein than dairy, this is unlikely to affect protein adequacy in Western populations consuming varied diets and typically meeting or exceeding recommended intakes.

The majority of non-organic PBDA provide bioavailable calcium comparable to dairy and many are fortified with vitamin D and vitamin B12. Enhancements can be made to address the iodine fortification gap, particularly in countries where dairy is a primary source, and to ensure more consistent fortification practices.



¹ Zhao Y, Martin BR, Weaver CM. Calcium bioavailability of calcium carbonate fortified soymilk is equivalent to cow's milk in young women. J Nutr 2005;135:2379-82