# **Nutritional considerations for dietitians**

## Calcium

A more sustainable diet does not necessarily have to exclude red meat or dairy altogether – therefore meat and dairy nutrient intakes need not be compromised.

This information sheet provides some additional information on nutritional considerations which dietitians may take into account. References and information sources are available as a separate download from www.bda.uk.com/onebluedot.

Calcium is the key nutrient for bone and dental health and adequate intakes are most critical during peak bone mass development – from birth to our mid-twenties.<sup>67</sup> Calcium is additionally needed for numerous metabolic and physiological processes including muscle function, blood clotting and energy metabolism.<sup>1</sup>

### Intakes

Calcium intakes in the UK are relatively good in most age groups with the exception of teenage boys and more so, teenage girls and women with a significant proportion consuming below the LRNI: 11%, 22% and 11% respectively.<sup>2</sup>

Calcium should not be an issue in the diet even for those choosing to avoid dairy altogether as demonstrated by findings from population studies comparing vegetarian, vegan and meat eaters.<sup>3-7</sup>

Calcium is now ubiquitous in the diet present in many plant foods and, since the mandatory fortification of white and brown flour milled in the UK (alongside thiamine, nicotinic acid and iron),<sup>8</sup> is abundant in the majority of cereal products consumed. Thus, in the UK, cereal products and dairy are the main contributors to calcium intakes.<sup>2</sup>

More importantly, those wishing to avoid dairy are very likely to switch to plant-based alternatives to milk and yogurt which, for the non-organic variants, are fortified with calcium to a level and bioavailability comparable to dairy<sup>9,10</sup> and vitamin D. Additionally, although high oxalate containing plant foods may hinder the absorption of calcium, it is well established that low oxalate green leafy vegetables such as pak choi, broccoli and kale have a calcium bioavailability almost double that of dairy calcium.<sup>11,12</sup>

The One Blue Dot 'Practical guide for dietitians: other source of calcium' sheet gives information on DRV for calcium and key sources.

#### References

**1.** EFSA. EU Register on Nutrition and Health Claims [Internet]. 2016 [cited 9/14/2018]. Available from: http://ec.europa.eu/food/safety/labelling\_nutrition/claims/register/public/?event=search

**2.** FSA, PHE. The National Diet and Nutrition Survey: results from years 7 and 8 (combined): rolling programme for 2014 to 2015 and 2015 to 2016 [Internet]. 2018 [cited 7/13/2018]. Available from: https://www.gov.uk/government/statistics/ndns-results-from-years-7-and-8-combined

**3.** Scarborough P, Appleby P, Mizdrak A *et al.* Dietary greenhouse gas emissions of meat-eaters, fish-eaters, vegetarians and vegans in the UK. Clim Change.. 2014;125(2):179-92.

**4.** Castane S, Asssumpcio A. Assessment of the nutritional quality and environmental impact of two food diets: A Mediterranean and a vegan diet. J Clean Prod. 2017;167:929-37.

**5.** González-García S, Esteve-Llorens X, Moreira M *et al.* Carbon footprint and nutritional quality of different human dietary choices. Sci Total Environ. 2018;644:77-94.

**6.** Sobiecki J, Appleby P, Bradbury K *et al.* High compliance with dietary recommendations in a cohort of meat eaters, fish eaters, vegetarians, and vegans: results from the European Prospective Investigation into Cancer and Nutrition-Oxford study. Nutr Res.. 2016;36(5):464-77.

**7.** Rizzo N, Jaceldo-Siegl K, Sabate J *et al.* Nutrient profiles of vegetarian and nonvegetarian dietary patterns. J Acad Nutr Diet.. 2013;113(12):1610-9.

**8.** Dept of Environment F&RA. Bread and Flour Regulations 1998 [Internet]. 2013 [cited 7/24/2018]. Available from: https://www.gov.uk/government/consultations/bread-and-flour-regulations-1998

**9.** Zhao Y, Martin B, Weaver C. Calcium bioavailability of calcium carbonate fortified soymilk is equivalent to cow's milk in young women. J Nutr. 2005;135(10):2379-82.

#### One Blue Dot Nutritional considerations: Calcium

**10.** Heaney R, Dowell M, Rafferty K *et al.* Bioavailability of the calcium in fortified soy imitation milk, with some observations on method. Am J Clin Nutr.. 2000;71(5):1166-9.

**11.** Weaver C, Proulx W, Heaney R. Choices for achieving adequate dietary calcium with a vegetarian diet. Am J Clin Nutr. 1999;70(3):543S-8S.

**12.** Chapter 2: Overview of Calcium (https://www.ncbi.nlm.nih.gov/books/NBK56060/#ch2.s5). In: Ross A, Taylor C, Yaktine A, editor. Institute of Medicine Committee to Review Dietary Reference Intakes for Vitamin D and Calcium. Washington (DC): National Academies Press (US); 2011.