

‘Sunshine eggs’: a novel vitamin D fortified food to improve vitamin D status in UK consumers?

South Asian volunteers aged 18-64 years and Caucasian volunteers aged 18-35 years are needed for an 8-week dietary intervention trial at Newcastle University from January to March 2018.

Vitamin D deficiency has adverse consequences for musculoskeletal health across all stages of the lifecycle. In July 2016, a new daily requirement of 10µg was introduced for vitamin D for people aged 4 years and above. It is extremely difficult however for the UK population to achieve this when considering current dietary intakes as highlighted by the National Diet and Nutrition Survey (NDNS), and the limited food sources of vitamin D.

Certain population groups in the UK are at increased risk of vitamin D deficiency, these include those who have limited sunlight exposure, and those from minority ethnic groups with dark skin. Furthermore, data from the NDNS has highlighted that people living in the Northern UK have a lower vitamin D status than those living in London and the South East, and that the highest prevalence of vitamin D deficiency among free-living adults is in the young 19-24 year-old group.

Whilst there is clear evidence from intervention studies of a beneficial effect of supplemental vitamin D on vitamin D status and musculoskeletal health, those studies which have demonstrated improvements have used high doses, well above that considered achievable from the daily diet. The question as to whether lower doses of vitamin D as part of a food-based intervention would have benefits to vitamin D status and musculoskeletal health in young Caucasian and young and middle-aged South Asian adults, at risk of poor vitamin D status remains unknown.

The overall aim of this PhD project is to explore the potential for vitamin D fortified eggs to improve vitamin D status in UK consumers. One aspect of this research is to conduct an 8-week dietary intervention trial in adults living in the North-East of England during late winter, to determine the effect of consuming vitamin D fortified eggs on markers of vitamin D status, musculoskeletal health and cardiovascular health.

Volunteers will be randomly allocated to one of three parallel treatment groups as follows:

Treatment group 1: Consumption of no more than 2 regular eggs a week

Treatment group 2: Consumption of 7 regular eggs a week

Treatment group 3: Consumption of 7 vitamin D fortified eggs a week

The trial will involve two visits (pre- and post-intervention) to the NU-Food, Food and Consumer Research Facility at Newcastle University. At each visit, volunteers will be asked to have their body measurements taken and to provide a small fasting blood sample, a blood pressure reading and perform a simple handgrip strength test. Information relating to diet, health and lifestyle, and sun exposure will be collected by questionnaires at the pre-intervention visit only.

A small number of volunteers will be recruited at random to voluntarily participate in a focus group which will be held approximately one month after the trial. In this discussion volunteers will be encouraged to share their experiences of participating, and to give their opinions on food fortification and acceptability of vitamin D fortified eggs.