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

Healthy Caucasian and South Asian volunteers aged 18-35 years are needed for an 8-week dietary intervention trial from January to March 2017.

Vitamin D deficiency has adverse consequences for musculoskeletal health across all stages of the lifecycle. In July 2016, a new daily requirement of 10 μg was introduced for vitamin D for people aged 4 years and above. It is difficult however for the UK population to meet this requirement, 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, defined as a serum concentration of 25(OH)D below 25 nmol/L. These include those who have limited sunlight exposure, and those from minority ethnic groups with dark skin. Furthermore, NDNS data shows that people living in the Northern UK (55-57°N) have a serum 25(OH)D concentration that is 10 nmol/L lower than those living in London and the South East (51°N), and that the highest prevalence of vitamin D deficiency among free-living adults is in 19-24 year-olds.

Whilst there is clear evidence from intervention studies of a beneficial effect of supplemental vitamin D (as D₃ or 25(OH)D) on vitamin D status and musculoskeletal health, those studies that have demonstrated improvements have used high doses, well above that considered achievable from the daily diet. Whether lower doses of 25(OH)D as part of a food-based intervention would have benefits to vitamin D status and musculoskeletal health in younger Caucasian and 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 enriched eggs to improve vitamin D status in UK consumers. The first phase will be to conduct an 8-week dietary intervention trial in 18-35 year-old Caucasian and South Asian adults living in the North-East of England (57°N) during late winter, to determine the effect of consuming 7 25(OH)D enriched eggs per week on markers of vitamin D status, bone metabolism, muscle function and cardiovascular health. Volunteers will be randomly allocated to one of three parallel treatment groups as follows:

- Treatment group 1: consumption of ≤ 2 regular eggs/ week
- Treatment group 2: consumption of 7 regular eggs/ week
- Treatment group 3: consumption of 7 vitamin D (as 25(OH)D) enriched eggs/ week

The trial will involve two visits 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.

A number of volunteers will be recruited at random to participate in an audio-recorded focus group discussion of their experiences of participating, approximately one month after completion of the trial.

A £20 Amazon voucher will be given in addition to the reimbursement of reasonable travel expenses involved in taking part in the study. If you are interested in participating in the study or would like further information, please contact us via email at sunshine.eggs@ncl.ac.uk