



## **VITAMIN D Briefing: SORTING FACT FROM FICTION ON THE BENEFITS OF SUPPLEMENTATION**

There has been significant media coverage recently reporting on various study findings that supplements, such as vitamin D, have not been found to prevent diseases. However, no food supplement can claim to prevent, treat or cure any disease. In light of this, The Health Supplements Information Service (HSIS) explores the role of supplementation, including vitamin D, in the diet.

Nutritionist, Dr Emma Derbyshire from HSIS says: “It is disappointing to see an array of recent studies reporting that certain supplements are not effective in treating specific diseases. Food supplements are actually **not intended to treat, prevent or cure any disease**, and in Europe, and thus the UK, the law states that food (including food supplements) cannot claim to do this<sup>1</sup>. Food supplements should not be used or seen as being medicines as this is certainly not their intended function.

Dr Derbyshire continues: “A varied and balanced diet throughout life is key in supporting our health and wellbeing. Unfortunately, evidence from the UK’s National Diet and Nutrition Survey shows a number of nutrient shortfalls across all ages. The addition of food supplements to help “top-up” on vitamin and mineral micronutrients can be beneficial in maintaining long term health and wellbeing.

“While some studies report on ‘monthly high-dose supplementation’, it is crucial to have regular daily intakes of vitamin supplements at recommended levels to help plug dietary gaps. More infrequent very high intakes should only be undertaken under the guidance of a doctor or dietician as some substances can be dangerous at very high levels.”

Turning specifically to vitamin D, latest UK data show that around a fifth of adults aged 19 to 64 years have low blood levels of vitamin D.<sup>2</sup> Alongside this, **average intakes of vitamin D from food sources alone are less than one-third of the Reference Nutrient Intake<sup>3</sup> (for children aged 1.5 to 3 years and adults aged 65 years and over (29% and 33%, respectively)<sup>4</sup> indicating the importance of dietary supplementation.**

### **SUNLIGHT IS NOT ENOUGH**

Nutritionist, Dr Emma Derbyshire, from HSIS says: “It is well known that our bodies use sunlight to make vitamin D. However, evidence shows that the sun is not high enough in the sky between the months of October and April to allow our bodies to make vitamin D from sunlight. This means we need vitamin D from other sources to support our health, and

---

<sup>1</sup> Food Supplements Directive 2002/46/EC and the Food Supplements (England) Regulations 2003

<sup>2</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/551352/NDNS\\_Y5\\_6\\_UK\\_Main\\_Text.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/551352/NDNS_Y5_6_UK_Main_Text.pdf) pp11.

<sup>3</sup> The Reference Nutrient Intake (RNI) is an amount regarded as enough or more than enough for the majority of people

<sup>4</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/551352/NDNS\\_Y5\\_6\\_UK\\_Main\\_Text.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/551352/NDNS_Y5_6_UK_Main_Text.pdf) pp17.

particularly bone health.<sup>5</sup> Furthermore, when we do get enough sunshine in the summer months, factors such as **air pollution, clothing and sunscreen use** can all act as notable **barriers** to this.”<sup>6</sup>

“A recent report from the Scientific Advisory Committee on Nutrition (SACN) has revised the recommended intakes for vitamin D. In response, **Public Health England** advises that everyone should supplement their diet with 10 micrograms (µg) a day throughout the winter. Some population groups who are at greatest risk of deficiency are advised to take this amount year-round, as noted below. This is regarded as the average amount needed by most of the population (97.5%) to maintain blood serum vitamin D levels above  $\geq 25$  nmol/L when UVB sunshine exposure is minimal <sup>7</sup> i.e. throughout the winter months. When blood levels fall below this amount this indicates that an individual may be deficient, though different cut-offs are sometimes used.”

### **GROUPS AT RISK OF DEFICIENCY**

Dietitian, Dr Carrie Ruxton, from HSIS adds: “It is very difficult to get enough vitamin D from the foods that we eat, mainly because there are so few naturally rich sources. The best source by far is oily fish but two thirds of adults and 90% of teenagers do not eat it regularly. Eggs and red meat also contain useful amounts of vitamin D. Some foods, such as certain breakfast cereals, soya products, some dairy products, powdered milks and fat spreads are fortified with vitamin D. **Unfortunately, the amounts added to these products vary and tend not to meet the new recommendation of 10 micrograms.**”<sup>8</sup>

**Several groups of people in the UK are a greater risk of vitamin D deficiency, including:**<sup>9,10</sup>

- **children under 5 years of age**
- **people aged 65 and over**
- **people who wear clothing that covers most of the skin**
- **those from ethnic minority groups with dark skin**
- **those who stay indoors for long periods or are housebound**
- **pregnant and breastfeeding women**

For those who fall within these at-risk groups, a positive difference to health could be made by taking a daily vitamin D supplement. It is recommended that adults in groups at risk of vitamin D deficiency take 10 µg of vitamin D each day throughout the year.<sup>11</sup>

### **BONE HEALTH.**

Vitamin D plays an important role in the regulation of calcium and phosphorus metabolism and, therefore, in bone health. Vitamin D is crucial across all life stages, playing a key role in bone health:<sup>12</sup>

---

<sup>5</sup> Scientific Advisory Committee on Nutrition (2016) Vitamin D and Health. pp xi.

<sup>6</sup> Scientific Advisory Committee on Nutrition (2016) Vitamin D and Health. pp xi.

<sup>7</sup> Scientific Advisory Committee on Nutrition (2016) Vitamin D and Health. pp xv.

<sup>8</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/390394/A5\\_Vitamin\\_leaflet\\_public\\_FINAL\\_22\\_12\\_14.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/390394/A5_Vitamin_leaflet_public_FINAL_22_12_14.pdf) pp3.

<sup>9</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/390394/A5\\_Vitamin\\_leaflet\\_public\\_FINAL\\_22\\_12\\_14.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/390394/A5_Vitamin_leaflet_public_FINAL_22_12_14.pdf) pp4.

<sup>10</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/537616/SACN\\_Vitamin\\_D\\_and\\_Health\\_report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/537616/SACN_Vitamin_D_and_Health_report.pdf) pp.140

<sup>11</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/390394/A5\\_Vitamin\\_leaflet\\_public\\_FINAL\\_22\\_12\\_14.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/390394/A5_Vitamin_leaflet_public_FINAL_22_12_14.pdf) pp4.

<sup>12</sup> Scientific Advisory Committee on Nutrition (2016) Vitamin D and Health.pp16-17.

- ✓ **Infancy and early childhood** – Vitamin D is needed to meet the demands of rapid growth for healthy skeletal development.
- ✓ **Childhood and adolescence** – Vitamin D is needed for bone health during this period of rapid growth when bone accretion (deposition) takes place contributing to peak bone mineral density.
- ✓ **Adults** – Vitamin D is needed to maintain healthy bones and prevent osteomalacia (bone softening) which can be presented as muscle weakness and bone tenderness, or pains in the ribs, spine, shoulder or pelvis.
- ✓ **Pregnancy and lactation** – Vitamin D supplements (10 µg per day) are currently recommended during pregnancy to ensure that the mother and subsequently her offspring are not deficient in vitamin D.

Whilst the current SACN recommendations for vitamin D are based on bone health, it has been suggested that vitamin D may have a role in other health outcomes, which include reducing the risk of autoimmune diseases, cancers, cardiovascular disease and infectious diseases.<sup>13</sup>

### **RESPIRATORY HEALTH.**

A recent meta-analysis published in *The British Medical Journal*<sup>14</sup> reviewed evidence from 25 randomised controlled trials (RCTs), comprised of data from 11,321 participants. It was found that **vitamin D supplementation significantly lowered the risk of acute respiratory infections**. Whilst supplementation benefitted all participants, the effects were found to be even stronger amongst those with vitamin D deficiency at baseline.

**Dr Emma Derbyshire comments:** “This was a high-quality publication with overall findings indicating that vitamin D supplementation, especially during the winter months may be helpful in protecting against severe respiratory tract infections, which affect many of us at that time of year.”

“Other work<sup>15</sup> has shown that **vitamin D can act as an adjunctive (supporting) therapy in the management of asthma**. Current evidence indicates that vitamin D may enhance the body’s response to asthma medication as well as potentially reducing the thickening and constriction that asthma creates in the lungs. In addition, there is emerging evidence<sup>16</sup> that vitamin D supplementation may help to reduce asthma risk in children, though further RCTs are needed to confirm this.”

### **MENTAL HEALTH.**

Dr Emma Derbyshire notes: “There is some evidence to indicate that vitamin D may help to support certain aspects of mental health. A meta-analysis,<sup>17</sup> using data from seven trials with a total of 3,191 participants found that vitamin D supplementation was effective in reducing depressive symptoms in those with clinical depression. Whilst further high-quality RCTs are needed, these results indicate that **vitamin D supplementation could benefit those diagnosed with depression**.”

---

<sup>13</sup> Scientific Advisory Committee on Nutrition (2016) Vitamin D and Health.pp1.

<sup>14</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5310969/>

<sup>15</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4514847/>

<sup>16</sup> <https://www.ncbi.nlm.nih.gov/pubmed/26322509>

<sup>17</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4008710/>

Dr Derbyshire adds “Other work<sup>18</sup> using data from over 100 pregnant women in Michigan found that low vitamin D levels early in pregnancy (at 12 to 20 weeks) was associated with a higher risk of depressive symptoms in early and late pregnancy. Given that around one in six<sup>19</sup> pregnancies is unplanned, raising the vitamin D status of the population as a whole is really important.”

“Further evidence from 25 cross-sectional studies and eight longitudinal studies<sup>20</sup> has found that low vitamin D levels (hypovitaminosis D) may have a role on the way in which mental health problems in children and teenagers develop. RCTs are now urgently needed to study this effect during these important life stages.”

## **SAFETY**

Dr Carrie Ruxton says: “Food supplements sold in the EU, including the UK, must comply with food law making them some of the most regulated food products around. The regulations apply whether the products are in your local pharmacy, or sold on the websites of European companies. This is great news for consumer safety.”

“In contrast, supplements sold on websites by non-EU companies do not necessarily meet the same stringent standards for safety, quality or purity. That’s why it can be risky to use these websites even though you think you’re getting a bargain because the products may be cheaper.”

“I would always recommend that people buy their food supplements, like vitamins, minerals, probiotics, fish oils or botanicals, from their pharmacist, health food store, or from European company websites. That way you get the benefits of these supplements and have peace of mind about the safety and quality.”

“Thanks to our strict food laws, food supplements sold in the UK meet exacting standards for safety and purity, and labelling claims will be compliant with regulations.”

Dr Emma Derbyshire further advises: “When taking vitamin D supplements people should follow Public Health England advice of 10µg per daily for those at risk of vitamin D deficiency. People should not be ‘super-dosing’ and if people have a diagnosed medical condition that may require higher amounts, these should be prescribed by a medical practitioner.”

## **CONCLUSION**

**Food supplements are intended to help us meet recommended nutrient intakes; they cannot claim to treat, prevent or cure any disease.** HSIS is concerned that studies which find that food supplements do not work in this way can cause confusion among consumers as to the real purpose of supplement products.

It is clear from dietary surveys that vitamin shortfalls are common in the UK population and Public Health England provides very clear advice on the benefits of supplementation with specific nutrients. Vitamin D is a good example - whilst it can be obtained from food sources, these are limited and not well consumed by the UK population. The richest dietary source is oily fish, however UK dietary surveys show that this is eaten in only small amounts. Whilst

---

<sup>18</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4971719/>

<sup>19</sup> <https://wellcome.ac.uk/press-release/one-six-pregnancies-among-women-britain-are-unplanned>

<sup>20</sup> <https://www.ncbi.nlm.nih.gov/pubmed/28176022>

some foods are fortified with vitamin D, this is generally to a relatively low level which is insufficient to make up the 10µg daily intake recommended.

Whilst vitamin D can be made by the body when exposed to sunlight, here in the UK it is not possible for our bodies to do this between October and April as the sun is too low in the sky. Therefore, blood levels of vitamin D drop in the autumn and winter and may become too low to maintain good health. Public Health England advises that everyone should take a food supplement containing 10µg of vitamin D throughout the winter. Those at risk of deficiency should consider continuing to supplement throughout the year.

The Health Supplements Information Service (HSIS) is a communication service providing accurate and balanced information on vitamins, minerals and other food supplements.

HSIS works with a panel of independent diet and nutrition experts to present the facts about food supplements in a simple, straightforward way.

HSIS is funded by PAGB (Proprietary Association of Great Britain), the UK trade association which represents the manufacturers of branded over-the-counter medicines, self care medical devices and food supplements.

**[www.hsis.org](http://www.hsis.org)**

**For further information or to arrange an interview with an HSIS spokesperson, please contact:**

- Charlotte Milton, Nexus PR, on 020 7052 8856 / [charlotte.milton@nexuspr.com](mailto:charlotte.milton@nexuspr.com)