

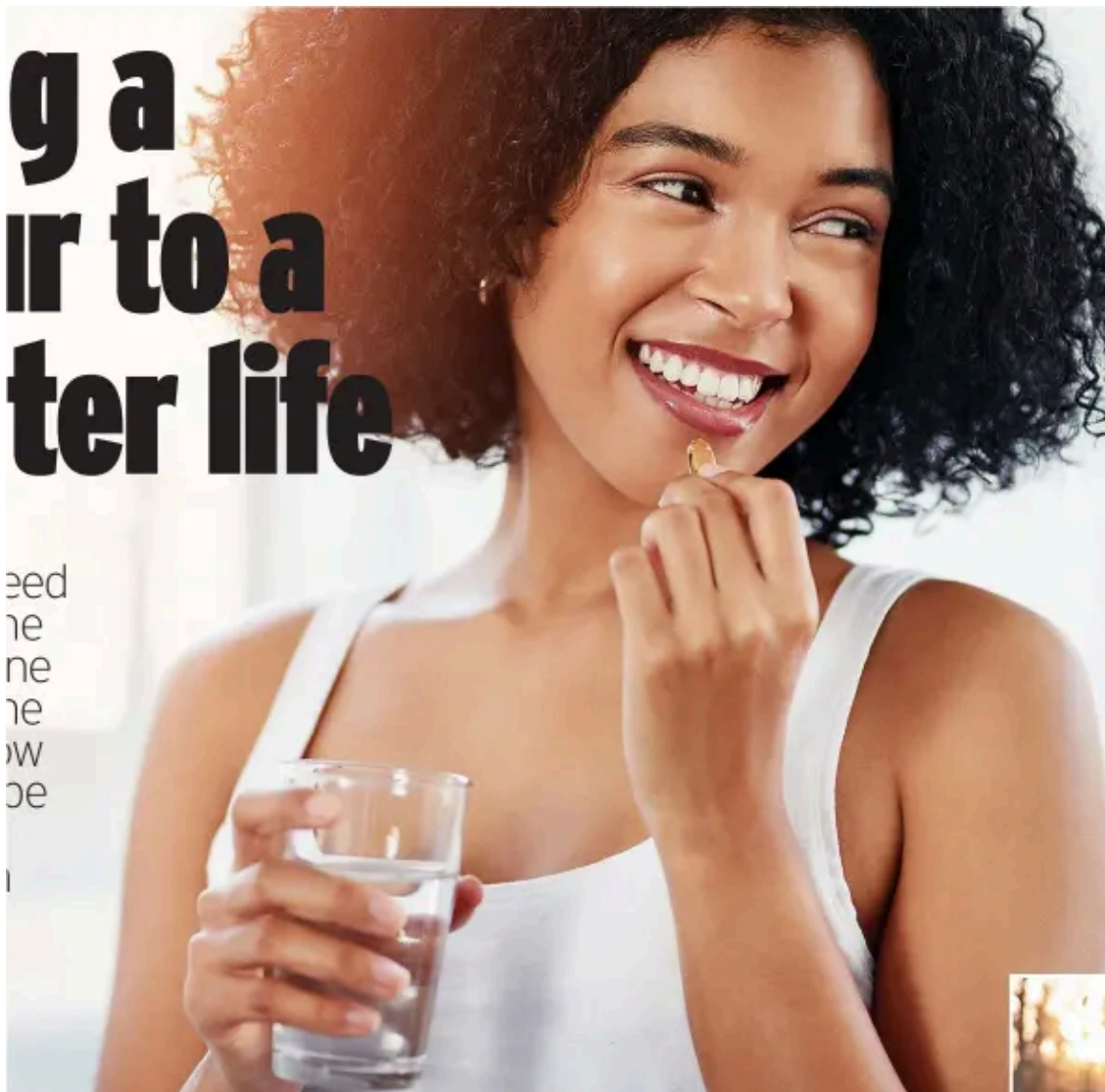
- Vitamins / Immune system

## Taking a D-tour to a brighter life

Jane Symons reveals all you need to know about the bone and immune boosting sunshine vitamin, from how likely you are to be deficient, to the latest science on supplements and how much is enough

Daily Express · 29 Oct 2024 · 22

Prepare yourselves – months of grey days lie ahead but we are already having to tap into our vitamin D reserves, and many people all already running low and risking their health.



The sunshine vitamin is best known for bone health, but there's evidence it protects against dementia, cardiovascular disease and other serious health conditions. Yet one in six working-age adults and one in eight pensioners has levels below 25 nanomoles per litre (nmol/L), which is considered the bare minimum needed to prevent serious health problems. Some experts believe we need twice this amount or even recommend aiming for blood levels as high as 75 to 100nmol/L. So how does the science stack up, and why is vitamin D so important? Mind the gap

Our skin makes vitamin D from sunlight, but from early October to early April, UV radiation reaching the UK is not strong enough for this to happen – and the further north you live, the shorter the window to make it.

This means we have to rely on vitamin D our body stores over summer, supplements or dietary intakes. But vitamin D is found in very few foods, and some people avoid the best sources – oily fish, red meat, liver, egg yolks and fortified foods such as breakfast cereals. Public health nutritionist Dr Emma Derbyshire says: “People who avoid fortified foods because they fall under the ‘ultra-processed’ umbrella put themselves at higher risk of deficiency.”

Other at-risk groups are over-65s, children under five, pregnant and breastfeeding women, people with darker skin and those who don’t spend much time outside, or wear covering clothing.

Signs of a shortfall include muscle and bone pain, increased sensitivity to pain, pins-and-needles and muscle weakness. Being overweight also increases the danger of deficiency. Dr Sarah Jarvis, visiting professor of general practice at the University of Huddersfield, says: “Living with obesity is consistently linked with lower vitamin D levels.”

It’s thought that circulating vitamin D gets locked in fatty tissue, where it can’t be used. What does D do?

Dr Derbyshire, who is also an adviser to the Health and Food Supplements Information Service, says: “Vitamin D has many different roles in the body. It’s needed for the absorption of calcium, magnesium, and phosphorus, which is why it is known for bone health. “But we now know vitamin D has much wider effects extending into immune health, respiratory health, and cognitive health.

“Many immune cells have a vitamin D receptor and require the nutrient to function. It helps to turn on body chemicals called peptides, in the immune system, which fight bacteria.

“Vitamin D metabolites also damp down inflammation, which is a factor in many chronic health conditions.”

#### Dementia dimension

A study by Dr Byron Creese, a neuroscience researcher at Brunel University, and researchers at Calgary University, looked at health records for 12,000 older adults, and found 40 per cent fewer dementia diagnoses in the group who took Vitamin D supplements. Dr Creese says: “In laboratory tests, vitamin D clears the amyloid associated with dementia.

“It is also known to have a role in inflammation, which could be another explanation.”

A paper published earlier this year calculated that levels below 50nmol/L – twice the minimum amount recommended in the UK – raise the risk of Alzheimer’s by 17 per cent and vascular dementia by 14 per cent.

#### Cancer clues

Some cancers are less common in countries with a lot of sunshine and optimal vitamin D levels appear to protect against bowel cancer, which is the fourth most common form of the disease in the UK.

Meta-analysis, which combines the findings of multiple studies, shows healthy levels are associated with an overall reduction in cancer risk. Laboratory studies confirm vitamin D has a number of actions which could slow or prevent cancer.

### Take heart

Cardiovascular disease accounts for 26 per cent of deaths in England, and the risk of early death from CVD is 47 per cent higher if you live in the North, which gets less sun.

Recent analysis found that vitamin D supplementation improved blood pressure, total cholesterol, blood sugar levels and insulin response.

Researchers concluded:

“Our findings suggest higher vitamin D levels are required to maintain cardiovascular health in non-Westerners, obese, and older populations.”

### Bone up on benefits

Official advice to take a vitamin D supplement during winter is based on proven benefits for bone health.

Dr Jarvis says: “Everyone needs vitamin D, but it’s particularly important if you’re at risk of osteoporosis.”

It enhances absorption of bone-building calcium and a study of 3,000 French pensioners found 800IU of vitamin D and 1,200mg of calcium reduced hip fracture risk 43 per cent. Another clue is the fact Scotland accounts for 10 per cent of the 76,000 hip fractures reported annually in the UK, but makes up only 8.2 per cent of the population.

Dr Derbyshire adds: “Vitamin D helps maintain muscle mass, which will protect against falls and fractures.”

We lose muscle as we age, but studies in athletes show vitamin D<sub>3</sub>, but not D<sub>2</sub>, increases muscle strength.

### Immunity issues

Prolonged exposure to sunlight reduces the risk of auto-immune conditions such as MS and rheumatoid arthritis and a study in the British Medical Journal reported that vitamin D supplementation for five years reduced the risk of auto-immune disease by 22 per cent.

But new meta-analysis of 43 studies found no benefit for respiratory infections. Lead author Professor Adrian Martineau, an expert in respiratory infection and immunity at Queen Mary Hospital, says: “The bottom line is vitamin D does not protect against respiratory infections.”

It’s thought the early optimism was driven by publication bias, as journals prefer to publish positive results.

### Breathe easier

Almost 5.4 million people in the UK have asthma and low levels of vitamin D are associated with a higher risk of potentially deadly exacerbations – when symptoms worsen, such as coughing, wheezing, chest tightness, or shortness of breath.

An evidence review by US researchers concluded that vitamin D supplements “lead to a statistically significant reduction” of exacerbations in adults.

### Links to mood

Low vitamin D is linked to depression and anxiety and vitamin D receptors are found in parts of the brain that regulate mood and behaviour.

A placebo-controlled study showed that large doses of vitamin D led to a significant reduction in symptoms.

Researchers at Cambridge University who analysed data from 333,000 UK adults found vitamin D supplementation reduced depression in people with low levels, possibly because it reduces oxidative stress and inflammation.

How much is enough?

According to the SACN, the Scientific Advisory Committee on Nutrition, blood levels of 25 nmol/L or higher are needed to protect musculoskeletal health. This represents the number of nanomoles of vitamin D in a litre of blood, although some studies use nanograms per millilitre, ng/mL. To convert from nanograms to nanomoles, multiply by 2.5.

Official advice is to take a top up of 10mcg during winter but, confusingly, this can also be shown as 10µg, or 400 international units, IU. Supplements may contain different amounts.

Should I take more?

A task force set up by the Endocrine Society recommends a much higher minimum: 30 ng/mL, which is just under 75nmol/L. And for anyone who is deficient it advises a daily dose of 6,000 IU (150mcg) for eight weeks, followed by a maintenance dose of 1,500 to 2,000 IU (37.5 to 50mcg) per day.

Like most vitamins, it's dangerous to take too much. In 2022, the British Medical Journal reported a man was hospitalised with recurrent vomiting and nausea after taking 150,000 IU – 375 times the official recommendation – every day for four months.

What to look for in a supplement

Two forms of vitamin D are used in supplements, D2, derived from plants, and D3, from animal sources. Studies show D3 is better at boosting blood levels. Dr Derbyshire advises: "Always look at the dosage to make sure it's at least the 10 micrograms recommended, and check the expiry date as levels decline over time. Because vitamin D is fat soluble, you should take it with food containing some fat, and you'll need to get into a routine of taking vitamin D if you want to improve your status.

"If you don't always remember, you are probably better to take a higher dosage every other day, or third day."

It suggests higher levels are required in obese and older populations