

# Clinical Update

## Vitamin D and breast cancer: sunlight or supplements?

Higher vitamin D levels from exposure to sunlight, specifically ultraviolet B (UVB), may reduce the incidence of breast cancer, according to a new study.

**(Breast Journal, May 2008)**

Correlating data on cancer from 107 countries, scientists from the University of California, San Diego (UCSD) found that higher blood levels of vitamin D and living closer to the equator were associated with lower breast cancer incidence.

However, commenting independently on the research, scientists from Yale University stated the results were confusing and shouldn't promote women to seek for more sun exposure. This suggests that increasing vitamin D levels should be achieved from fortified foods and dietary supplements.

A growing body of evidence has linked vitamin D to reduced incidences of cancer, but increasing vitamin D levels via sunlight or supplements has been a source of ongoing debate.

In the US, where over 1.5 million people are diagnosed with skin cancer every year, experts are pushing supplements, claiming recommendations for sun exposure are "highly irresponsible".

The link between vitamin D intake and protection from cancer dates from the 1940s when Frank Apperly demonstrated a link between latitude and deaths from cancer, and suggested that sunlight gave "a relative cancer immunity."

Vitamin D refers to two biologically inactive precursors - D3, also known as cholecalciferol, and D2, also known as ergocalciferol. Both D3 and D2 precursors are hydroxylated in the liver and kidneys to form 25-hydroxyvitamin D (25(OH)D), the non-active 'storage' form, and 1,25-dihydroxyvitamin D (1,25(OH)2D), the biologically active form that is tightly controlled by the body.

There is growing evidence that 1,25(OH)2D has anticancer effects, but the discovery that non-kidney cells can also hydroxylate 25(OH)D had profound implications, implying that higher 25(OH)D levels could protect against cancer in the local sites.

Garland and co-workers used data from GLOBOCAN, a new tool developed by the World Health Organization's International Agency for Research on Cancer, to assess the incidence of breast cancer and vitamin D3 levels, triggered by exposure to UVB, in 107 countries.

A dose-response was observed between blood vitamin D levels and the incidence of breast cancer, and vitamin D levels were correlated with sun exposure.

Scientists from Yale were quick to state that the results may be confusing, and potentially dangerous, since cancer researchers have warned for decades the risk of skin cancer from unprotected sun exposure.

Previously, Boston University School of Medicine researchers wrote in *the Journal of the American Academy of Dermatologists* that, from an evolutionary point-of-view, the trade-off between obtaining vitamin D from sunlight exposure and the effects of photoaging and skin cancer was sensible since lifespans were not very long. It does not make sense, the scientists argued, in a society where life expectancy has doubled and 30% of Caucasians will develop skin cancer.

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