D-Essence
Medical Insights on Vitamin D

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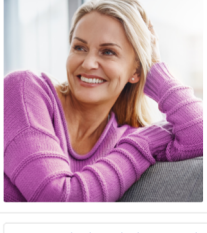
Beyond skeletal health, research over recent decades has unveiled Vitamin D's broader physiological functions, including immune modulation, inflammation regulation and cellular differentiation, sparking interest in its potential as an anti-cancer agent. Epidemiological studies often showcase marked association between low Vitamin D levels and an increased risk of colorectal, breast, prostate, head and neck cancer, etc. Fermenta, a leading manufacturer of Vitamin D, presents this D-Essence Newsletter to highlight the latest research on the role of Vitamin D in cancer.

Vitamin D supplementation may improve pathological response during chemotherapy in breast cancer



A randomized clinical trial evaluated the impact of Vitamin D supplementation on the pathological complete response (pCR) in women with breast cancer undergoing neoadjuvant chemotherapy. At baseline (~20 days after diagnosis), mean serum Vitamin D levels indicated hypovitaminosis D in women randomized to receive either Vitamin D supplementation or placebo. At 6 months, Vitamin D supplementation was associated with an 80% higher pCR rate Vs. placebo. After adjusting for confounders, women with Vitamin D levels ≥20 mg/mL were 3.6-fold more likely to achieve a pCR Vs. those with Vitamin D deficiency (<20 ng/mL).

Omodei MS et al. Nutr Cancer. 2025;77(5):648-657

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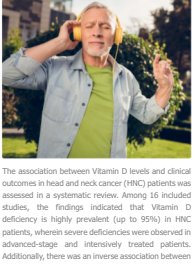
Adequate Vitamin D levels probably lowers head and neck cancer risk



The association between Vitamin D levels and clinical outcomes in head and neck cancer (HNC) patients was assessed in a systematic review. Among 16 included studies, the findings indicated that Vitamin D deficiency is highly prevalent (up to 95%) in HNC patients, wherein severe deficiencies were observed in advanced-stage and intensively treated patients. Additionally, there was an inverse association between Vitamin D levels and HNC risk, with higher serum Vitamin D levels linked to a 30-32% risk reduction. Although some studies lacked statistical significance, higher Vitamin D levels also correlated with improved survival and reduced recurrence.

Mot CI et al. Nutrients. 2025 Mar 21;17(7):1100

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Vitamin D levels might be negatively correlated with colorectal cancer risk

A cross-sectional study analyzed the association between serum Vitamin D concentrations and colorectal cancer (CRC) risk among 43,678 adult participants. In the fully adjusted model, patients with Vitamin D deficiency (<30 nmol/L and 30 to <50 nmol/L) were 2-fold more likely to develop CRC compared to those with insufficiency (50 to <75 nmol/L). Furthermore, a significant inverse association between serum Vitamin D and CRC risk was evident at concentrations ≤75 nmol/L ($P < 0.001$), emphasizing the benefit of maintaining levels >75 nmol/L. Additionally, each 1 nmol/L increase in serum Vitamin D concentration was associated with a 2.3% risk reduction of CRC.

Wang Y et al. PLoS One. 2025 Mar 25;20(3):e0320316

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