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Vitamin D intake may be effective in the management of triple-negative breast cancer

Dear Editor,

Triple-negative breast cancers are defined by lack of expression of estrogen, progesterone and HER-2 receptors. This subgroup accounts for 15% of all types of breast cancer. Since there are no specific-targeted treatment guidelines for this subgroup, triple-negative breast cancer is managed with standard treatment, leading to a high rate of local relapse and systemic dissemination [1]. Checkpoint mechanisms are essential for the maintenance of genomic integrity. In vertebrates when cells experience replication arrest or undergo DNA damage by UV irradiation, the ATR kinase [ataxia telangiectasia mutated (ATM)- and Rad3-related kinase] phosphorylates and activates the checkpoint kinase 1 (Chk1). The activated Chk1 inhibits Cdc25 phosphatases, which control inhibitory phosphorylation sites on cyclin-dependent kinases, the latter being critical regulators of cell cycle transitions [2]. Full activation of Chk1 by ATR requires Claspin, which may act as a scaffolding protein that brings together ATR and Chk1 [3]. A recent study showed that the E2F-regulated gene Chk1 is highly expressed in triple-negative breast carcinomas [4]. Furthermore, Chk1 and Claspin were quickly downregulated in mouse MC3T3-E1 and in mouse mammary carcinoma cells by treatment with 1,25-dihydroxyvitamin D3, which is a known inhibitor of cell proliferation [5]. In the light of the above information, we suggest that vitamin D intake may be effective in the management of triple-negative breast cancer. This proposal should be verified in large clinical trials including patients with triple-negative breast cancer.

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