Vitamin D Analogs "DO-REVA" and "DO-REVB" for Cancer Prevention and Treatment

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Technology description

The hormonally active form of vitamin D, known as calcitriol or 1,25 dihydroxyvitamin D_3, has shown promise for treating diseases ranging from osteoporosis to cancer to psoriasis. However, the hormone mobilizes calcium from bones and increases intestinal absorption of dietary calcium. Effective therapeutic concentrations can lead to hypercalcemia; a condition characterized by elevated blood calcium levels, alterations in mental status, muscle weakness and calcification of soft tissues and organs such as the heart and kidneys. Therefore, a need exists for non-calcemic compounds that provide desirable therapeutic effects without causing dose-limiting hypercalcemia. UW–Madison researchers have developed two novel vitamin D analogs, 1,2-cyclopentene-25-hydroxy-19-nor-vitamin D_3, known as DO-REVA, and 3,2-cyclopentene-1α-25-dihydroxy-19-nor-vitamin D_3, known as DO-REVB. Both analogs bind the vitamin D receptor with lower affinity than the native hormone. One of the analogs, DO-REVA, has measurable transcription activity at higher concentrations, suggesting that it may serve as a slow-release anticancer drug or be used as a local-acting drug when coupled with an appropriate delivery method. The other analog, DO-REVB, promotes cancer cell differentiation, making it potentially useful for the treatment of cancer. Like DO-REVA, DO-REVB also may serve as a slow-release or local-acting drug.

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing vitamin D analogs that are potentially useful as chemotherapeutic agents, particularly against leukemia, colon cancer, breast cancer, skin cancer and prostate cancer.

Application area

Cancer treatment, particularly for leukemia, colon cancer, breast cancer, skin cancer or prostate cancer

Advantages

Less likely to cause dose-limiting hypercalcemia than calcitriol
May be administered in many forms

Institution

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