

Crystallized Vitamin D Compound Known as "NEL"

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Technology description

The hormonally active form of vitamin D, known as calcitriol or 1,25 dihydroxyvitamin D₃, 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 previously developed a vitamin D analog, (20R,25S)-2-methylene-19,26-dinor-1 α ,25-dihydroxyvitamin D₃, also known as NEL, which has very low calcemic activity. This compound is potentially useful for the treatment of disorders like renal osteodystrophy. However, it must be purified before it can be used as a pharmaceutical. UW–Madison researchers now have developed a method of using water and methanol to crystallize NEL. This efficient process removes most of the contaminants from the synthetic NEL, resulting in a highly pure product.

Application area

Production of highly pure NEL for use as a pharmaceutical to treat diseases such as renal osteodystrophy, psoriasis or cancer

Advantages

Process yields 99.5 percent pure NEL.

Crystallization process occurred easily and efficiently.

Solvent mixture was easy to remove.

Precipitated crystals were large enough to be recovered via filtration or other means.

NEL is less likely to cause dose-limiting hypercalcemia than calcitriol.

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