Cholecalciferol

Cell Culture Tested

Product Code: TC029

Product Description:

Molecular weight: 384.64
Molecular formula: $C_{27}H_{44}O$
CAS No.: 67-97-0
Synonyms: (+)-Vitamin D3, 7-Dehydrocholesterol activated, Activated 7-dehydrocholesterol, Calciol

Cholecalciferol, more commonly known as Vitamin D3, is a naturally occurring steroid hormone synthesized in skin of animals upon exposure to ultraviolet-B (UVB) radiation from sunlight. Within the body, cholecalciferol facilitates intestinal absorption of calcium and thus regulates mineral metabolism and bone growth.

In cell cultures, cholecalciferol mainly plays two roles:

1. Induction of Differentiation

The presence of cholecalciferol in cultures regulates differentiation of keratinocytes. Cholecalciferol induces differentiation of human myeloid leukemia cells (HL-60) into mature granulocytes. It also stimulates the adipocytic differentiation of porcine mesenchymal stem cells derived from the bone marrow. The mechanisms of differentiation vary depending on the cell type.

2. Inhibition of Proliferation of Cancer Cells

Cholecalciferol in cultures exerts an antiproliferative effect on a number of cancer cell lines such as colon cancer, prostate cancer, pancreatic cancer, glioblastoma and breast cancer. The mechanisms of cancer prevention include:

- arresting the cell cycle
- promoting apoptosis
- up-regulating nuclear receptors
- enhancing responsiveness to cytotoxic agents

Directions of Use:

Preparation Instructions:
Cholecalciferol is water insoluble. Solutions of desired concentrations can be prepared in ethanol or acetone. Prepared solutions can be sterilized by filtering through a sterile membrane filter with porosity of 0.22 microns.
Do not autoclave the solution.

Quality Control:

Appearance
White with yellow cast powder

Solubility
Clear, colorless solution at 100mg in 10ml of ethanol

Specific rotation [alpha]20/D
+105° to +112°

Assay
NLT 97%

Cell Culture Test
Passes

Storage and Shelf Life:

Store powder at 2-8°C in air tight container.
Protect from light and moisture.
Shelf life is 36 months.
Use before expiry date given on product label.

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