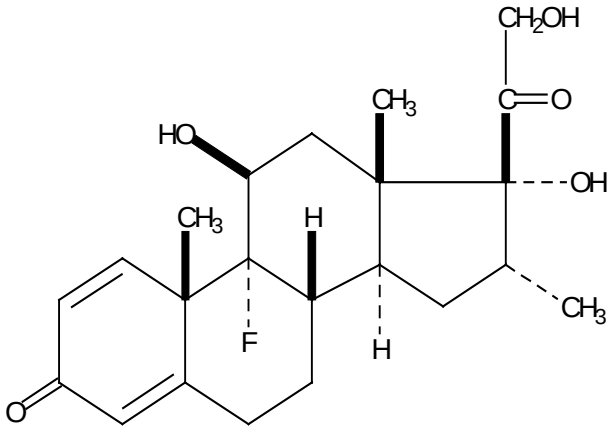
ProductInformation

DEXAMETHASONE CRYSTALLINE

Sigma Prod. No. D1756

CAS NUMBER: 50-02-2
SYNONYMS: 9α-Fluoro-16α-Methylprednisolone, Desamethasone



PHYSICAL PROPERTIES:
Molecular Formula: $C_{22}H_{29}FO_5$
Molecular Weight: 392.5
Appearance: White to white with a yellow cast powder
$E^{1\%}$(240 nm) = 380-410 (ethanol)[1]
Melting Point = 255°C with decomposition[1]
268-271°C[2]
262-264°C[3]
$[\alpha]_D^{20}$ = +75 to +80 (in 1% dioxane)[1]

Dexamethasone is a synthetic glucocorticoid.

STABILITY / STORAGE AS SUPPLIED:
This product should be stored at 2-8°C and protected from light. If properly stored, it will have a shelf-life of 5 years.

SOLUBILITY / SOLUTION STABILITY:
Dexamethasone is practically insoluble in water. It is soluble in ethanol, methanol, acetone, dioxane and slightly soluble in chloroform.[4] Sigma routinely tests the solubility at 50 mg/mL in ethanol with heat yielding a clear, colorless to faint yellow solution. However, dexamethasone will precipitate out of solution as the temperature returns to room temperature. At 25 mg/mL in methanol[5] or ethanol[6] clear, colorless solution is obtained without heating.

Dexamethasone solutions are stable for at least 30 days when stored at 4°C and protected from light. The solution may be aliquoted and stored at -20°C. However, insufficient information is available to assess the shelf-life of the frozen solution.[5]

Dexamethasone has a biological half-life in plasma of about 2-5 hours.[6]

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APPLICATIONS:
Dexamethasone is a potent and highly stable glucocorticoid. It exhibits general properties of corticosteroids and is used for its anti-inflammatory and anti-rheumatic activity and immunosuppressant effects in a wide variety of disorders.[4]

In biochemical studies, dexamethasone has been used to induce liver tyrosine aminotransferase.[2] It has also been employed as an antiemetic drug in controlling nausea and vomiting induced by chemotherapy. Although the mechanism is not fully understood, it is believed that the glucocorticoid may inhibit prostaglandin synthesis.[7] It has also been reported that dexamethasone inhibits the pyrogenic activity of prostaglandin F2a but not that of prostaglandin E2. The dosage used was in the range of 0.5 mg/kg injected subcutaneously into rats in a volume of 1 ml/kg.[8] Dexamethasone has also shown to inhibit the release of phospholipase A2, a potent pro-inflammatory enzyme, in stimulated macrophages of sheep and rabbits.[9]

A working range of 4-500 ng/mL is recommended as a medium supplement for cell culture applications.[5]

REFERENCES:

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4. *Martindale: The Extra Pharmacopoeia*, 30th ed., 728 (1993).
5. Sigma data.
6. *Clarke's Isolation and Identification of Drugs*, 2nd ed., 518 (1986).
7. Markman, M. et al., *New Engl. J. Med.*, 311, 549-552 (1984).
8. Coelho, M.M. et al., *Eur. J. Pharmacol.*, 238, 391-394 (1993).
9. Vadas, P., *Life Sciences*, 30, 155-162 (1982).