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# DATASHEET

## Dexamethasone (water-soluble)

### Product overview

|                          |                                                                                                                                                                                         |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>              | Dexamethasone (water-soluble)                                                                                                                                                           |
| <b>Cat No</b>            | HB6020                                                                                                                                                                                  |
| <b>Biological action</b> | Agonist                                                                                                                                                                                 |
| <b>Purity</b>            | >98%                                                                                                                                                                                    |
| <b>Description</b>       | Water soluble formulation of dexamethasone: synthetic glucocorticoid with potent anti-inflammatory actions. Induces hMSC differentiation. Apoptosis inducer. Suitable for cell culture. |

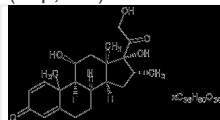
### Biological Data

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Biological description</b> | Synthetic glucocorticoid which shows potent anti-inflammatory and immunosuppressant effects.<br><br>Induces differentiation of mesenchymal stem cells (hMSCs) into adipogenic, chondrogenic and osteogenic lineages.<br><br>Commonly used with <b>ascorbic acid</b> and $\beta$ -Gly for osteogenic differentiation of stem cells.<br><br>This is a water soluble compound composed of a dexamethasone – Cyclodextrin complex (Approx. 65 mg dexamethasone per gm. Balance 2-hydroxypropyl- $\beta$ -cyclodextrin).<br><br>Recently investigated as part of COVID-19 compound repurposing.<br><br>Apoptosis inducer.<br><br><b>Dexamethasone</b> free base also available. |
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### Solubility & Handling

|                             |                                                                                                                               |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>Storage instructions</b> | -20 °C (protect from light)                                                                                                   |
| <b>Solubility overview</b>  | Soluble in water (100 mM)                                                                                                     |
| <b>Important</b>            | This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not for human or veterinary use. |

### Chemical Data

|                           |                                                                                                                                                                                                                                                                                                                                            |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Chemical name</b>      | (11 $\beta$ ,16 $\alpha$ )-9-Fluoro-11,17,21-trihydroxy-16-methyl-pregna-1,4-diene-3,20-dione                                                                                                                                                                                                                                              |
| <b>Chemical structure</b> | <br>The image shows the chemical structure of dexamethasone, a synthetic glucocorticoid. It features a steroid nucleus with a fluorine atom at C-9, hydroxyl groups at C-11, C-17, and C-21, a methyl group at C-16, and ketone groups at C-3 and C-20. |
| <b>Molecular Formula</b>  | $C_{22}H_{29}FO_5 \cdot xC_{36}H_{60}O_{30}$                                                                                                                                                                                                                                                                                               |

|                    |                                                                                                                                                                                                                                                                 |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chemical name      | (11β,16α)-9-Fluoro-11,17,21-trihydroxy-16-methyl-pregna-1,4-diene-3,20-dione                                                                                                                                                                                    |
| CAS Number         | 50-02-2                                                                                                                                                                                                                                                         |
| PubChem identifier | 71308592                                                                                                                                                                                                                                                        |
| SMILES             | CC1CC2C3CCC4=CC(=O)C=CC4(C3C(CC2(C1C(=O)CO)C)O)C.C(C1C2C(C(C(O1)OC3C(OC(C(C3O)O)OC4C(OC(C(C4O)O)OC5C(OC(C(C5O)O)OC6C(OC(C(C6O)O)OC7C(OC(C(C7O)O)OC8C(OC(O2)C(C8O)O)CO)CO)CO)CO)CO)CO)O)O                                                                        |
| InChi              | InChI=1S/C42H70O35.C22H30O4/c43-1-8-29-15(50)22(57)36(64-8)72-30-9(2-44)66-38(24(59)17(30)52)74-32-11(4-46)68-40(26(61)19(32)54)76-34-13(6-48)70-42(28(63)21(34)56)77-35-14(7-49)69-41(27(62)20(35)55)75-33-12(5-47)67-39(25(60)18(33)53)73-31-10(3-45)65-37(71 |
| InChiKey           | XEJNDGTUKUMQNG-ARJMFYCQSA-N                                                                                                                                                                                                                                     |
| MDL number         | MFCD00064136                                                                                                                                                                                                                                                    |
| Appearance         | White to off-white solid                                                                                                                                                                                                                                        |
| Formulation        | Approximately 65 mg dexamethasone per gm. Balance 2-hydroxypropyl-β-cyclodextrin.                                                                                                                                                                               |

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## References

### Dexamethasone alleviates tumor-associated brain damage and angiogenesis.

Fan Z *et al* (2014) PLoS One 9(4)  
**PubMedID** [24714627](#)

### Glucocorticoid receptor antagonism by cypoterone acetate and RU486.

Honer C *et al* (2003) Mol Pharmacol 63(5)  
**PubMedID** [12695529](#)

### Short bouts of mechanical loading are as effective as dexamethasone at inducing matrix production by human bone marrow mesenchymal stem cell.

Sittichokechaiwut A *et al* (2010) Eur Cell Mater 20  
**PubMedID** [20648425](#)

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