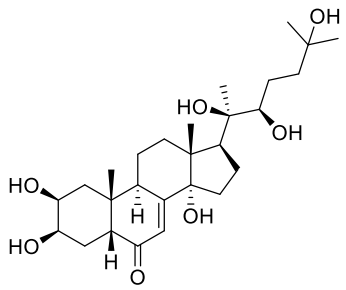
Product data sheet

MedKoo Cat#: 600130 Name: Ecdysterone CAS#: 5289-74-7 Chemical Formula: $C_{27}H_{44}O_7$ Exact Mass: 480.3087 Molecular Weight: 480.63	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

20-Hydroxyecdysone (ecdysterone or 20E) is a naturally occurring ecdysteroid hormone which controls the ecdysis (moulting) and metamorphosis of arthropods. It is therefore one of the most common moulting hormones in insects, crabs, etc. It is also a phytoecdysteroid produced by various plants, including Cyanotis vaga, where its purpose is presumably to disrupt the development and reproduction of insect pests. In arthropods, 20-hydroxyecdysone acts through the ecdysone receptor. Although mammals lack this receptor, 20-hydroxyecdysone may affect mammalian (including human) biological systems in vitro, but there is uncertainty whether any in vivo or physiological effects occur. 20-Hydroxyecdysone is an ingredient of some supplements that aim to enhance physical performance, but there is no clinical evidence for this effect. (Source: http://en.wikipedia.org/wiki/Ecdysterone).

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	75.33	156.73
DMF	30.0	62.42
Ethanol	60.5	125.88
PBS (pH 7.2)	10.0	20.81

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	2.08 mL	10.40 mL	20.81 mL
5 mM	0.42 mL	2.08 mL	4.16 mL
10 mM	0.21 mL	1.04 mL	2.08 mL
50 mM	0.04 mL	0.21 mL	0.42 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Shuvalov O, Fedorova O, Tananykina E, Gnennaya Y, Daks A, Petukhov A, Barlev NA. An Arthropod Hormone, Ecdysterone, Inhibits the Growth of Breast Cancer Cells via Different Mechanisms. Front Pharmacol. 2020 Oct 30;11:561537. doi: 10.3389/fphar.2020.561537. PMID: 33192507; PMCID: PMC7663021.
2. Wen F, Yu J, He CJ, Zhang ZW, Yang AF. β-ecdysterone protects against apoptosis by promoting autophagy in nucleus pulposus cells and ameliorates disc degeneration. Mol Med Rep. 2019 Mar;19(3):2440-2448. doi: 10.3892/mmr.2019.9861. Epub 2019 Jan 15. PMID: 30664184.

In vivo study

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1. Yang L, Friedemann T, Pan J. Ecdysterone Attenuates the Development of Radiation-Induced Oral Mucositis in Rats at Early Stage. Radiat Res. 2021 Jul 8. doi: 10.1667/RADE-21-00042.1. Epub ahead of print. PMID: 34237140.
2. Tang Y, Mo Y, Xin D, Zeng L, Yue Z, Xu C. β-ecdysterone alleviates osteoarthritis by activating autophagy in chondrocytes through regulating PI3K/AKT/mTOR signal pathway. Am J Transl Res. 2020 Nov 15;12(11):7174-7186. PMID: 33312358; PMCID: PMC7724317.

7. Bioactivity

Biological target:

Ecdysterone inhibits caspase activity and induces autophagy via the 20E nuclear receptor complex, EcR-USP.

In vitro activity

Results shown in Figures 1A–C clearly demonstrate that in othis study's case the treatment with Ecdy has down-regulated all three cell lines starting with a concentration of 250–750 μM. No increase in cell proliferation was detected.

Reference: Front Pharmacol. 2020; 11: 561537. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7663021/

In vivo activity

As shown in Figure 6A, significant cartilage degeneration, with proteoglycan depletion, loss of surface lamina and fibrillations were observed on OA model rats and OA rats treated with 3-methyladenine. These OA-like symptoms were greatly improved in OA rats treated with rapamycin and β-ecdysterone, especially with 100 nM rapamycin and 40 μM β-ecdysterone. As shown in Figure 6B, the concentration of IL-1β, IL-6, NO and TNF-α were found to be significantly decreased in rapamycin and β-ecdysterone treated rats, compared with control. On the contrary, IL-1β, IL-6, NO and TNF-α were excessively secreted in the cartilage tissue in OA rats treated with 3-methyladenine (*$P < 0.05$, vs. Control, **$P < 0.01$, vs. Control). These data indicated that the pathological and inflammatory states of OA rats were remarkably improved by β-ecdysterone in a dose dependent manner.

Reference: Am J Transl Res. 2020; 12(11): 7174–7186. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7724317/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.