

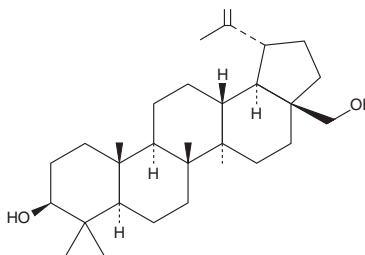
PRODUCT INFORMATION



Betulin

Item No. 11041

CAS Registry No.: 473-98-3
Formal Name: (3 β)-lup-20(29)-ene-3,28-diol
Synonyms: (+)-Betulin, NSC 4644, Trochol
MF: C₃₀H₅₀O₂
FW: 442.7
Purity: \geq 98%
Supplied as: A crystalline solid
Storage: -20°C
Stability: \geq 4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Betulin is supplied as a crystalline solid. A stock solution may be made by dissolving the betulin in the solvent of choice, which should be purged with an inert gas. Betulin is soluble in the organic solvent dimethyl formamide at a concentration of approximately 2.5 mg/ml.

Description

Sterol regulatory element binding protein 2 (SREBP-2) regulates cholesterol synthesis by activating the transcription of genes for HMG-CoA reductase and other enzymes of the cholesterol synthetic pathway.^{1,2} When cellular sterol levels are high, SREBP is bound by SCAP and Insig to ER membranes as a glycosylated precursor protein. Upon cholesterol depletion, the protein is cleaved to its active form and translocated into the nucleus to stimulate transcription of genes involved in the uptake and synthesis of cholesterol.³ Betulin, the precursor of betulinic acid, is a pentacyclic triterpene found in the bark of birch trees. Betulin inhibits the SREBP-driven pathway of cholesterol and fatty acid biosynthesis by promoting SCAP-Insig binding which prevents the activation and release of SREBP-2 from the ER.⁴ At 15-30 mg/kg/day, betulin has been shown to decrease lipid levels and increase insulin sensitivity in mice fed a Western-type diet.⁴ In an atherosclerosis disease model, 30 mg/kg/day betulin can reduce the size and improve the stability of atherosclerotic plaques in LDLR-knockout mice.⁴ At 2.5-5 μ g/ml betulin, in combination with cholesterol, demonstrates anticancer effects by inducing apoptosis in Jurkat cells, A549 lung carcinoma cells, and HeLa cervical carcinoma cells.⁵

References

1. Sakai, J., Nohturfft, A., Goldstein, J.L., *et al.* Cleavage of sterol regulatory element-binding proteins (SREBPs) at site-1 requires interaction with SREBP cleavage-activating protein. Evidence from *in vivo* competition studies. *J. Biol. Chem.* **273**(10), 5785-5793 (1998).
2. Brown, M.S. and Goldstein, J.L. The SREBP pathway: Regulation of cholesterol metabolism by proteolysis of a membrane-bound transcription factor. *Cell* **89**, 331-340 (1997).
3. Smith, L.H., Petrie, M.S., Morrow, J.D., *et al.* The sterol response element binding protein regulates cyclooxygenase-2 gene expression in endothelial cells. *J. Lipid Res.* **46**, 862-871 (2005).
4. Tang, J.-J., Li, J.-G., Qi, W., *et al.* Inhibition of SREBP by a small molecule, betulin, improves hyperlipidemia and insulin resistance and reduces atherosclerotic plaques. *Cell Metab.* **13**(1), 44-56 (2011).
5. Mullauer, F.B., Kessler, J.H., and Medema, J.P. Betulin is a potent anti-tumor agent that is enhanced by cholesterol. *PLoS One* **4**(4), (2009).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

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