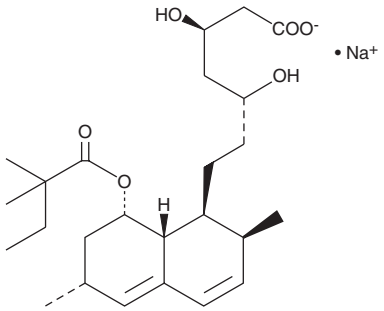
PRODUCT INFORMATION

Simvastatin (sodium salt)

Item No. 10010345

CAS Registry No.: 101314-97-0
Formal Name: (βR,δR,1S,2S,6R,8S,8aR)-8-(2,2-dimethyl-1-oxobutoxy)-1,2,6,7,8,8a-hexahydro-β,δ-dihydroxy-2,6-dimethyl-1-naphthaleneheptanoic acid, monosodium salt
Synonym: SVA
MF: $C_{25}H_{39}O_6 \bullet Na$
FW: 458.6
Purity: ≥98%
UV/Vis.: λ_{max}: 231, 238, 246 nm
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years



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

Laboratory Procedures

Simvastatin (sodium salt) is supplied as a crystalline solid. A stock solution may be made by dissolving the simvastatin (sodium salt) in the solvent of choice, which should be purged with an inert gas. Simvastatin (sodium salt) is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of simvastatin (sodium salt) in these solvents is approximately 10 mg/ml.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of simvastatin (sodium salt) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of simvastatin (sodium salt) in PBS (pH 7.2) is approximately 50 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Simvastatin is a competitive inhibitor of HMG-CoA reductase (K_i = 0.12 nM).[1] Simvastatin reduces plasma cholesterol levels in rats and dogs when administered at doses of 1.2 and 8 mg/kg, respectively.[2] Simvastatin suppresses TNF-induced NF-κB activation (IC_{50} = ~13 µM) and potentiates apoptosis in human myeloid leukemia cells.[3] It also inhibits glutathione peroxidase 4 (GPX4) activity, increases malondialdehyde (MDA) levels, and induces ferroptosis in MDA-MB-231 and MCF-7 breast cancer cells.[4] Formulations containing simvastatin have been used in the treatment of dyslipidemias.

References

1. Corsini, A., Maggi, F.M., and Catapano, A.L. Pharmacology of competitive inhibitors of HMG-CoA reductase. *Pharmacol. Res.* **31(1)**, 9-27 (1995).
2. Chao, Y., Chen, J.S., Hunt, V.M., *et al*. Lowering of plasma cholesterol levels in animals by lovastatin and simvastatin. *Eur. J. Clin. Pharmacol.* **40(Suppl 1)**, S11-S14 (1991).
3. Ahn, K.S., Sethi, G., and Aggarwal, B.B. Reversal of chemoresistance and enhancement of apoptosis by statins through down-regulation of the NF-κB pathway. *Biochem. Pharmacol.* **75(4)**, 907-913 (2008).
4. Lu, S., Shao, N.-Y., Bi, J., *et al*. Abstract PS18-44: Simvastatin induces ferroptosis in breast cancer cells by inhibiting GPX4 and sensitizes chemotherapy. *San Antonio Breast Cancer Virtual Symposium* (2021).

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