



Formula: C₃₃H₄₀O₁₅

MW: 676.67

CAS: 489-32-7

Smiles:

c12c(c(c(cc1O)O)[C@@H]1O[C@@H](C([C@@H](C1O)O)O)CO)CC=C(C)C)oc(c(c2=O)OC1[C@@H]([C@@H]([C@H]([C@@H](O1)C)O)O)O)c1ccc(cc1)OC

THERAPEUTIC CATEGORY: antioxidant,[8][9] antidepressant[10][11][12] and nootropic[13][14]

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Zironi E, Pagliuca G, Bosisio E. Potent Inhibition of Human Phosphodiesterase-5 by Icariin Derivatives. *Journal of Natural Products*. 2008 Sep 9. PMID 18778098 6. ^ Xu HB, Huang ZQ. Icariin enhances endothelial nitric-oxide synthase expression on human endothelial cells in vitro. *Vascular Pharmacology*. 2007 Jul;47(1):18-24. PMID 17499557 7. ^ Zhang ZB, Yang QT. The testosterone mimetic properties of icariin. *Asian Journal of Andrology*. 2006 Sep;8(5):601-5. PMID 16751992 8. ^ Xie J, Sun W, Duan K, Zhang Y. Chemical constituents of roots of *Epimedium wushanense* and evaluation of their biological activities. *Natural Product Research*. 2007 Jun;21(7):600-5. PMID 17613817 9. ^ Zhao F, Tang YZ, Liu ZQ. Protective effect of icariin on DNA against radical-induced oxidative damage. *Journal of Pharmacy and Pharmacology*. 2007 Dec;59(12):1729-32. PMID 18053336 10. ^ Pan Y, Kong L, Xia X, Zhang W, Xia Z, Jiang F. Antidepressant-like effect of icariin and its possible mechanism in mice. *Pharmacology, Biochemistry and Behaviour*. 2005 Dec;82(4):686-94. PMID 16380159 11. ^ Pan Y, Zhang WY, Xia X, Kong LD. Effects of icariin on hypothalamic-pituitary-adrenal axis action and cytokine levels in stressed Sprague-Dawley rats. *Biological and Pharmaceutical Bulletin*. 2006 Dec;29(12):2399-403. PMID 17142971 12. ^ Pan Y, Kong LD, Li YC, Xia X, Kung HF, Jiang FX. Icariin from *Epimedium brevicornum* attenuates chronic mild stress-induced behavioral and neuroendocrinological alterations in male Wistar rats. *Pharmacology, Biochemistry and Behaviour*. 2007 May;87(1):130-40. PMID 17509675 13. ^ Luo Y, Nie J, Gong QH, Lu YF, Wu Q, Shi JS. Protective effects of icariin against learning and memory deficits induced by aluminium in rats. *Clinical and Experimental Pharmacology and Physiology*. 2007 Aug;34(8):792-5. PMID 17600559 14. ^ Zheng M, Qu L, Lou Y. Effects of icariin combined with *Panax notoginseng* saponins on ischemia reperfusion-induced cognitive impairments related with oxidative stress and CA1 of hippocampal neurons in rat. *Phytotherapy Research*. 2008 May;22(5):597-604. PMID 18398927 15. ^ Yin XX, Chen ZQ, Liu ZJ, Ma QJ, Dang GT. Icariin stimulates proliferation and differentiation of human osteoblasts by increasing production of bone morphogenetic protein 2. *Chinese Medical Journal (English)*. 2007 Feb 5;120(3):204-10. PMID 17355822 16. ^ Zhang G, Qin L, Shi Y. *Epimedium*-derived phytoestrogen flavonoids exert beneficial effect on preventing bone loss in late postmenopausal women: a 24-month randomized, double-blind and placebo-controlled trial. *Journal of Bone and Mineral Research*. 2007 Jul;22(7):1072-9. PMID 17419678 17. ^ Chen KM, Ge BF, Liu XY, Ma PH, Lu MB, Bai MH, Wang Y. Icariin inhibits the osteoclast formation induced by RANKL and macrophage-colony stimulating factor in mouse bone marrow culture. *Pharmazie*. 2007 May;62(5):388-91. PMID 17557750 18. ^ Huang J, Yuan L, Wang X, Zhang TL, Wang K. Icaritin and its glycosides enhance osteoblastic, but suppress osteoclastic, differentiation and activity in vitro. *Life Sciences*. 2007 Aug 16;81(10):832-40. PMID 17764702 19. ^ Zhang DW, Cheng Y, Wang NL, Zhang JC, Yang MS, Yao XS. Effects of total flavonoids and flavonol glycosides from *Epimedium koreanum* Nakai on the proliferation and differentiation of primary osteoblasts. *Phytomedicine*. 2008 Jan;15(1-2):55-61. PMID 17482445 20. ^ Qin L, Han T, Zhang Q, Cao D, Nian H, Rahman K, Zheng H. Antiosteoporotic chemical constituents from Er-Xian Decoction, a traditional Chinese herbal formula. *Journal of Ethnopharmacology*. 2008 Jul 23;118(2):271-9. PMID 18501540

SOURCE: Icariin is a flavonoid glycoside compound derived from several species of plants in the *Epimedium* family, which are commonly known as Horny Goat Weed or Yin Yang Huo.[1]

ACCEPTORS: 15

DONORS: 8

ROTATION BONDS: 6

N+O: 15

Chiral Centers: 10

LogP: -2.13

LogS: -3.79

LIPINSKI: 1

