Natural Products

ChemFaces

Usnic acid Datasheet

5th Edition (Revised in January, 2017)

[Product Information]

Name: Usnic acid

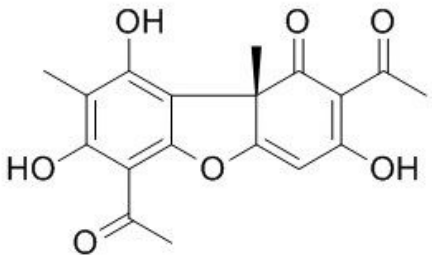
Catalog No.: CFN97236

Cas No.: 7562-61-0

Purity: >= 98%

M.F: $C_{18}H_{16}O_7$

M.W: 344.3



Physical Description: Yellow powder

Synonyms:2,6-Diacetyl-1,2,3,9b-tetrahydro-7,9-dihydroxy-8,9b-dimethyldibenzofuran-1, 3-dione;Antibiotic lichen acid; L/D-Usnic acid; (+)-Usnic acid; plus-usnic acid.

[Intended Use]

1. Reference standards;
2. Pharmacological research;
3. Food research;
4. Cosmetic research;
5. Synthetic precursor compounds;
6. Intermediates & Fine Chemicals;
7. Perfumery;
8. Ecology;
9. Others.

[Source]

From *Usnea diffracta Vain.*

[Biological Activity or Inhibitors]

Use of reconstituted bovine type-I collagen-based films containing usnic acid can improve burn healing process in rats.[1]

Usnic acid has the antimicrobial activity against Escherichia coli (ATCC 35218), Enterococcus faecalis (RSKK 508), Proteus mirabilis (Pasteur Ens. 235), Staphylococcus aureus, Bacillus subtilis and Bacillus megaterium, it is shown that with increasing amount of usnic acid,the antimicrobial activity increased.[2]

Usnic acid has gastroprotective effect, the effect can be attributed to its reducing effect on the oxidative damage and neutrophil infiltration in tissues. [3]

Usnic acid has larvicidal potential against Aedes ae- gypti, exhibits LC_{50} of 6.6 ppm (6.1 to 7.0 ppm).[4]

The (-)-usnic acid enantiomer is a selective natural herbicide because of its blocking action against a specific key plant enzyme, other recognised characteristics of usnic acid are ultraviolet absorption and preserving properties.[5]

Usnic acid and diffractaic acid are the analgesic and antipyretic components of a lichen, Usnea diffracta, they show an analgesic effect by the acetic acid-induced writhing and tail-pressure methods in mice.[6]

The property of usnic acid as a non-genotoxic anti-cancer agent that works in a p53-independent manner makes it a potential candidate for novel cancer therapy.[7]

(+)-Usnic acid shows a dose-dependent anti-inflammatory activity.[8]

Usnic acid is a potent inhibitor of plant p-hydroxyphenylpyruvate dioxygenase, it can inhibit protophorphyrinogen oxidase activity (I50=3 microM), but do not lead to protoporphyrin IX accumulation.[9]

High dose (+)usnic acid has hepatotoxic effect, which may involve its reactive metabolite(s), causing loss of integrity of membrane like structures, resulting in destruction of mitochondrial respiration and oxidative phosphorylation.[10]

[Solvent]

Chloroform, Dichloromethane, DMSO, Acetone, etc.

[HPLC Method][2]

Mobile phase: Methanol-Phosphate buffer (pH 7.4) =70:30 ;

Flow rate: 0.8 ml/min;

Column temperature: 30 ℃;

The wave length of determination: 245 nm.

[Storage]

2-8℃, Protected from air and light, refrigerate or freeze.

[References]

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[3] Odabasoglu F, Cakir A, Suleyman H, *et al. J. Ethnopharmacol., 2006, 103(1):59-65.*

[4] Bomfim R R, Araújo A A S, Cuadros-Orellana S, *et al. Lat. Am. J. Pharm., 2009, 300(2): R349-60.*

[5] Cocchietto M, Skert N, Nimis P, *et al.Naturwissenschaften. 2002,89(4):137-46.*

[6] Okuyama E, Umeyama K, Yamazaki M, *et al. Planta Med.,1995,61(2):113-5.*

[7] Mayer M, O'Neill M A, Murray K E, *et al. Anti-cancer Drugs, 2005, 16(8):805-9.*

[8] Vijayakumar C S, Viswanathan S, Reddy M K, *et al. Fitoterapia, 2000, 71(5):564-6.*

[9] Romagni J G, Meazza G, Nanayakkara N P, *et al. FEBS Lett., 2000, 480(2-3):301-5.*

[10] Pramyothin P, Janthasoot W, Pongnimitprasert N, *et al. J.Ethnopharmacol., 2004, 90 (2-3):381-7.*

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