



ISO 9001:2015
Certification
ISO 16128-1 ISO 16128-2-2017 EPA www.epa.gov/greenchemistry

KAMPOYAKI NATURAL PRODUCTS BIO-CHEMISTRY

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NORISOBOLDINE

Datasheet

Kampoyaki Novo-Drug Screening Libraries 4th Edition (Revised in July, 2016)

PRODUCT INFORMATION

Name: Norisoboldine

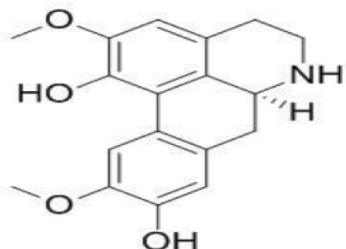
Catalog No.: KRN99528

Cas No.: 23599-69-1

Purity: >=98%

M.F: C₁₈H₁₉NO₄

M.W: 313.35



Physical Description: White cryst.

Synonyms: (+)-N-Norisoboldine; (+)-Laurelliptine; (S)-(+)-Laurelliptine; Norisoboldine; (6aS)-5,6,6a,7-Tetrahydro-2,10-dimethoxy-4H-dibenzo[de,g]quinoline-1,9-diol.

POTENTIAL USES

- 1.** Reference standards; **2.** Pharmacological research; **3.** Food and cosmetic research;
- 4.** Synthetic precursor compounds; **5.** Active Pharmaceutical Intermediates (API) & Fine Chemicals; **6.** Ingredient in supplements, beverages; **7.** Agricultural research; **8.** Botanical Bio- Allelopathy, **9.** Natural Botanical Molecules as Botanical Bio-Herbicides **10.** As Botanical Bio- Anti-Blight Fungicides

SOURCE

The root of *Lindera aggregata* (Sims) Kosterm.

BIOLOGICAL ACTIVITY OR INHIBITORS

Norisoboldine is the main isoquinoline alkaloid occurring in *Radix Linderae*, the dry roots of *Lindera aggregata* (Lauraceae family)□it has been previously implicated to be able to ameliorate the synovial inflammation and abnormal immune conditions in collagen-induced arthritis of mice; it inhibits the macrophage activation and the resultant production of pro-inflammatory cytokines via down-regulating the activation of MAPKs signaling pathways rather than NF-κB.^[1]

Norisoboldine can suppress osteoclast differentiation through preventing the accumulation of TRAF6-TAK1 complexes and activation of MAPKs/NF-κB/c-Fos/NFATc1 pathway; it also inhibits the production of interleukin-6 in fibroblast-like synoviocytes from adjuvant arthritis rats through PKC/MAPK/NF-κB-p65/CREB pathway.^[2,3]

Norisoboldine can significantly alleviate the severity of collagen II -induced arthritis (CIA) , based on the reduced clinical scores and elevated the lowered body weights of model mice, it also significantly suppressed the enhanced T cell responses in vivo, suggests that norisoboldine might be a potential therapeutic agent for rheumatoid arthritis, and it functions through protecting joint destruction as well as regulating the abnormal immune responses.^[4]

Norisoboldine can alleviate joint destruction in AIA rats by reducing RANKL, IL-6, PGE2, and MMP-13 expression via the p38/ERK/AKT/AP-1 pathway.^[5]

Norisoboldine attenuates inflammatory pain and decreases forskolin-evoked cyclic adenosine monophosphate levels in mouse spinal cord neuronal cultures through the adenosine A1 receptor.^[6]

Norisoboldine inhibit VEGF-induced endothelial cell migration via a cAMP-PKA-NF- κB/Notch1 signaling pathway^[7]

SOLVENT

Chloroform, Dichloromethane, DMSO, Acetone, etc.

HPLC METHOD (8)

Mobile phase: Acetonitrile-0.5% Formic acid(adjusted pH 2.25 with triethylamine),gradient elution ;

Flow rate: 1.0 ml/min;

Column temperature: 25 °C;

The wave length of determination: 280 nm.

STORAGE

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

REFERENCES

- [1] Luo Y, Liu M, Dai Y, et al. Inflammation, 2010, 33(6):389-97.
- [2] León M, Martín P, Bravo D, et al. Plos One, 2013, 8(3):e59171-e59171.
- [3] Wei Z F, Wang FY, Song J, et al. J. Cell Biochem., 2012, 113(8):2785-95.
- [4] Luo Y, Liu M, Xia Y, et al. Phytomedicine International Journal of Phytotherapy & Phytopharmacology, 2010, 17(10):726-31.
- [5] Wei Z F, Jiao X L, Wang T, et al. Acta Pharmacol. Sin., 2013, 34(3):403-13.
- [6] Gao X, Lu Q, Chou G, et al. Eur. J. Pain, 2014, 18(7):939-48.
- [7] Lu Q, Tong B, Luo Y, et al. Plos One, 2013, 8(12):e81220.
- [8] Chen J, Chen G X, Yang L, et al. China Journal of Chinese Materia Medica, 2009, 34(21):2774-6.



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CERTIFICATE OF ANALYSIS

Name: Norisoboldine

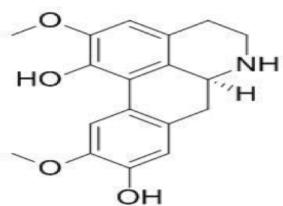
Catalog No.: KRN99528

Cas No.: 23599-69-1

Purity: >=98%

M.F: C₁₈H₁₉NO₄

Physical Description: Powder



Solvent: Chloroform, Dichloromethane, Ethyl Acetate, DMSO, Acetone, etc.

Weight 20 mg

Lot No. KRS201702

Storage Protected from air and light, refrigerate or freeze (2-8 °C)

Intended Use For laboratory use only

Shelf Life 2 years

CHARACTERIZATION DATA SUMMARY

Analytical Test

Identification by $^1\text{H-NMR}$, HPLC

Purity tested

Results

Consistent with the above structure

$\geq 98\%$



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GHS SAFETY DATA SHEET

Version 4.2

Revision Date 01/01/2018

Print Date 01/08/2019

1. PRODUCT AND COMPANY IDENTIFICATION

GHS Product Name: Norisoboldine

Product code: KRN99528

Company: KAMPOYAKI HERBS PTE LTD

Address: 16 New Industrial Road, #05-05 Hudson Techno Centre Singapore 536204

Tel: +65-63833202

Fax: +65-63833632

Website: www.kampoyaki-research.com

E-mail: thiru-sam@kampoyaki-research.com | kampoyak@singnet.com.sg

2. HAZARDS IDENTIFICATION

2.1 GHS classification

Physical Hazards: Not classified

Health Hazards: Not classified

Environmental Hazards: Not classified

2.2 GHS label elements, including precautionary statements

Pictograms or hazard symbols: None

Signal word: No signal word

Hazard statements: None

Precautionary statements: None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name: Norisoboldine

CAS#: 23599-69-1

Purity: >=98%

Formula: C₁₈H₁₉NO₄

Molecular Weight: 313.35

Hazard Symbols: ---

Risk Phrases: ---

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Consult a doctor.

Skin: Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Consult a doctor.

Ingestion: Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water. Consult a doctor.

Inhalation: Remove from exposure and move to fresh air immediately. Consult a doctor.

4.2 Indication of immediate medical attention and special treatment needed

Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

5. FIRE FIGHTING MEASURES

5.1 Suitable extinguishing

Media: Dry chemical, foam, water spray, carbon dioxide.

Precautions for firefighters: Fire-extinguishing work is done from the windward and the suitable fire-extinguishing method according to the surrounding situation is used. Uninvolved persons should evacuate to a safe place. In case of fire in the surroundings: Remove movable containers if safe to do so.

5.2 Special protective

Equipment for firefighters: When extinguishing fire, be sure to wear personal protective equipment.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing vapors, mist or gas.

6.2 Environmental precautions

Do not let product enter drains.

6.3 General Information

Use proper personal protective equipment as indicated in Section 8.

6.4 Spills/Leaks

Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Decontaminate spill site with 10% caustic solution and ventilate area until after disposal is complete

7. HANDLING AND STORAGE

7.1 Precautions for safe handling:

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation. Keep away from sources of ignition. Avoid prolonged or repeated exposure.

7.2 Storage

Store in a well closed container. Protected from air and light, refrigerate or freeze.(2-8°C)

7.3 Specific end uses

Use in a laboratory fume hood where possible. Refer to employer is COSHH risk assessment.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Engineering controls

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels.

Control parameters: Not set up

8.2 Personal protective equipment

Respiratory protection: Dust respirator. Follow local and national regulations.

Hand protection: Protective gloves.

Eye protection: Wear safety glasses and chemical goggles if splashing is possible.

Skin and body protection: Wear appropriate protective gloves and clothing to prevent skin exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

- a) Appearance Yellow powder
- b) Odour no data available
- c) Odour Threshold no data available
- d) pH no data available
- e) Melting point/freezing point no data available
- f) Initial boiling point and boiling range no data available
- g) Flash point no data available
- h) Evaporation rate no data available
- i) Flammability (solid, gas) no data available
- j) Flammability or explosive limits no data available
- k) Vapour pressure no data available
- l) Vapour density
- m) Relative density no data available
- n) Water solubility no data available
- o) Partition coefficient: no data available
- p) Autoignition temperature no data available
- q) Decomposition temperature no data available
- r) Viscosity no data available
- s) Explosive properties no data available
- t) Oxidizing properties no data available

10 - STABILITY AND REACTIVITY

10.1 Reactivity

Stable under recommended transport or storage conditions.

10.2 Chemical Stability

Stable under normal temperatures and pressures.

10.3 Conditions to Avoid

Incompatible materials, strong oxidants, heat.

10.4 Incompatibilities with Other Materials

Strong oxidising/reducing agents, strong acids/alkalis.

10.5 Hazardous Decomposition Products

Nitrogen oxides, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide, nitrogen.

10.6 Hazardous Polymerization

Has not been reported.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity: No data available

Skin corrosion/ irritation: No data available

Serious eye damage/irritation: No data available

Germ cell mutagenicity: No data available

Carcinogenicity: ---

IARC: No data available

NTP: No data available

Reproductive toxicity: No data available

12. ECOLOGICAL INFORMATION

Toxicity: No data available

Persistence and degradability: No data available

Bioaccumulative potential: No data available

Mobility in soil: No data available

Results of PBT and vPvB assessment: No data available

Other adverse effects: May be harmful to the aquatic environment.

13. DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with federal, state, and local regulations.

14. TRANSPORT INFORMATION

14.1 Hazards Class:

Does not meet the criteria for classification as hazardous for transport

14.2 UN proper shipping name

ADR/RID: Not dangerous goods

IMDG: Not dangerous goods

IATA: Not dangerous goods

14.3 Transport hazard class(es)

Does not meet the criteria for classification as hazardous for transport.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

No data available

15.2 Chemical Safety Assessment

No data available

16. ADDITIONAL INFORMATION

This GHS SDS above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

End of GHS safety data sheet



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