KAMPOYAKI NATURAL
PRODUCTS BIO-CHEMISTRY

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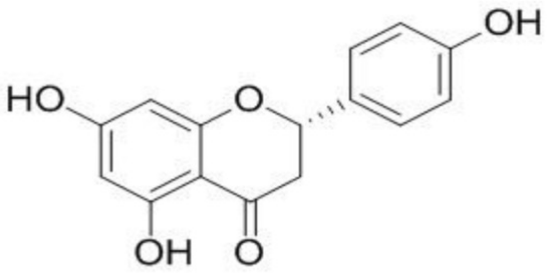
ISO 9001:2015 Certification
ISO 16128-1 ISO 16128-2-2017 EPA www.epa.gov/greenchemistry

NARINGENIN

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

PRODUCT INFORMATION



Name: Naringenin
Catalog No.: KRN98742
Cas No.: 480-41-1
Purity: >=95%
M.F: $C_{15}H_{12}O_5$
M.W: 272.3
Physical Description: Powder
Synonyms: (s)-Naringenin;(2S)-5,7-dihydroxy-2-(4-hydroxyphenyl)-2,3-dihydro-4H-chromen-4-one.

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 fruits of Citrus aurantium L.

BIOLOGICAL ACTIVITY OR INHIBITORS

Naringenin, one of the most abundant flavonoids in citrus fruits, it has inhibitory effects on tumor growth in human cancer cell lines and sarcoma S-180-implanted mice,suggests that it may have a potentially useful inhibitory effect on tumor growth.[1]
Naringenin inhibits very low density lipoprotein (vLDL) secretion both in vivo and in vitro, inhibits the microsomal triglyceride transfer protein activity as well as the transcription of 3-hydroxy-3-methyl-glutaryl-coenzyme A reductase and acyl-coenzyme A:cholesterol acyltransferase 2 in infected cells; stimulation with naringenin reduces HCV secretion in infected cells by 80%; naringenin is effective at concentrations that are an order of magnitude below the toxic threshold in primary human hepatocytes and in mice; suggests naringenin is a novel therapeutic approach for the treatment of hepatitis C virus (HCV) infection.[2]
Naringenin and hesperetin, lower plasma cholesterol in vivo, an enhanced expression of the low density lipoprotein (LDL) receptor, reduced activity and expression of acyl CoA:cholesterol acyltransferase (ACAT) 2 and MTP, these mechanisms may explain the hypocholesterolemic properties of them. [3]
Naringenin and naringin have anti-atherogenic effect, the effect is involved with a decreased hepatic ACAT activity and with the downregulation of VCAM-1 and MCP-1 gene expression.[4]
Administration of naringenin to gastric carcinoma-induced rats largely up-regulated the redox status to decrease the risk of cancer, the up-regulation of antioxidants by naringenin treatment might be responsible for the anticancer effect in gastric carcinoma.[5]
Naringenin exhibits neuroprotection in the 6-OHDA model of Parkinson's disease (PD) , the protection may be related to their antioxidant capabilities and their capability to penetrate into the brain.[6]
Naringenin may be beneficial in ameliorating the cadmium-induced oxidative damage in the liver of rats.[7]
Naringenin prevents dyslipidemia, apolipoprotein B overproduction, and hyperinsulinemia in LDL receptor-null mice with diet-induced insulin resistance, thus, naringenin, through its

correction of many of the metabolic disturbances linked to insulin resistance, represents a promising therapeutic approach for metabolic syndrome.[8]
Naringenin is a weak estrogen that also exhibits partial antiestrogenic activity in the female rat uterus and MCF-7 human breast cancer cells.[9]
Naringenin, a dietary flavonoid, possesses potent antidepressant-like property via the central serotonergic and noradrenergic systems, suggests the therapeutic potential of this dietary flavonoid in central nervous system disorders especially depression where monoaminergic systems are involved.[10]
Naringenin reduces the extent of cisplatin-induced nephrotoxicity by significant reduction in serum urea and creatinine concentrations, decreased polyuria, reduction in body weight loss, marked reduction in urinary fractional sodium excretion and glutathione S-transferase (GST) activity, and increased creatinine clearance.[11]
Naringenin exhibits anti-inflammatory and antitumor activities, it may provide neuroprotection through suppression of pro-inflammatory pathways in activated BV2 microglial cells.[12]

SOLVENT

Pyridine, Methanol, Ethanol, Hot water, etc.

HPLC METHOD (13)

Mobile phase: Methanol- 0.2% Phosphoric acid H_2O, gradient elution ;

Flow rate: 1.0 ml/min;

Column temperature: Room Temperature;

The wave length of determination: 290 nm.

STORAGE

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

REFERENCES

[1] Kanno S, Tomizawa A, Hiura T, et al. Biol. Pharmaceut. Bull., 2005, 28(3):527-30.
[2] Yaakov Nahmias , Goldwasser J, Casali M, et al. Hepatology, 2008, 47(5):1437-45.
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[5] Ekambaram G, Rajendran P. Nutr. Res., 2008, 28(2):106-12.
[6] Zbarsky V, Datla K S, Rai D K, et al. Free Rad. Res., 2005, 39(10):1119-25.
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[10] Yi L T, Li C F, Zhan X, et al. Prog. Neuro-Psychoph., 2010, 34(7):1223-8.
[11] Badary O A, Abdel S. Life Sci., 2005, 76(18):2125-35.
[12] Park H Y, Kim G Y, Choi Y H. Int. J. Mol. Med., 2012, 30(1):204-10.
[13] Zhou G F, Chen S H, Lv G Y, et al. China Journal of Chinese Materia Medica, 2013, 38(4):520-3.

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CERTIFICATE OF ANALYSIS

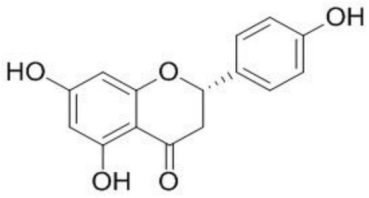
Name: Naringenin

Catalog No.: KRN98742

Cas No.: 480-41-1

Purity: >= 98%

M.F: $C_{15}H_{12}O_5$



Physical Description: Powder

Solvent: Pyridine, Methanol, Ethanol, etc.

Weight 20mg

Lot No. KRS201802

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	Results
Identification by , HPLC	Consistent with the above structure
Purity tested	>= 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: Naringenin

Product code: KRN98742

Company: KAMPOYAKI HERS 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: Naringenin

CAS#: 480-41-1

Purity: >=98%

Formula: $C_{15}H_{12}O_5$

Molecular Weight: 272.3

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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