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**KAMPOYAKI NATURAL
PRODUCTS BIO-CHEMISTRY**

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ASTRAGALOSIDE IV

Datasheet

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

PRODUCT INFORMATION

Name: Astragaloside IV

Catalog No.: KRN99171

Cas No.: 84687-43-4

Purity: >=98%

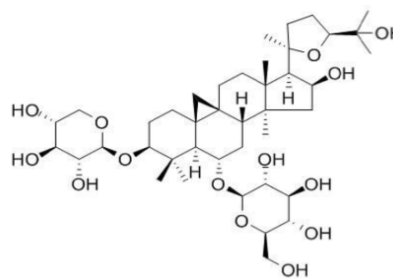
M.F: C₄₁H₆₈O₁₄

M.W: 784.98

Physical Description: White powder

Synonyms:

beta-D-Glucopyranoside;(3beta,6alpha,16beta,20R,24S)-20,24-epoxy-16,25-dihydroxy-3-(beta-D-xylopyranosyloxy)-9,19-cyclolanostan-6-yl;(5xi,6beta,8xi,9xi,16alpha, 20R,24S)-16,25-dihydroxy-3-(beta-D-xylopyranosyloxy)-20,-24-epoxy-9,19-cyclolanostan- 6-yl beta-D-glucopyranoside.



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 *Astragalus membranaceus* (Fisch.) Bunge.

BIOLOGICAL ACTIVITY OR INHIBITORS

Astragaloside IV, a saponin isolated from *Astragalus membranaceus*, has been shown to protect the myocardium against ischemia/reperfusion injury, it also has beneficial effect in H/R-induced injury may be related to normalization of SR Ca²⁺ pump expression and, thus, it may prevent the depression in SR Ca²⁺ handling.^[1]

Astragaloside IV synergizes with ferulic acid to inhibit renal tubulointerstitial fibrosis in rats with obstructive nephropathy.^[2]

Astragaloside IV attenuates glycated albumin-induced epithelial-to-mesenchymal transition by inhibiting oxidative stress in renal proximal tubular cells.^[3]

Astragaloside IV can reduce phosphorylation of JNK and ERK1/2 induced by complement membranous attack complex, the mechanism of *Astragalus membranaceus* in the treatment of membranous nephropathy (MN) may be related to its attenuation of podocyte injury through regulation of cytoskeleton and mitogen activated protein kinase. ^[4]

Astragaloside IV can reduce blood pressure and triglyceride levels in fructose-fed rats and high dose of astragaloside IV also improves glucose tolerance and endothelium-dependent vasorelaxation, the mechanism is associated with increased levels of aortic NO_x and cGMP and is abrogated by blockade of nitric oxide synthase with NG-nitro-L-arginine methyl ester (L-NAME), suggests that astragaloside IV may be useful in ameliorating food-induced metabolic syndrome.^[5]

Astragaloside IV attenuates inflammatory cytokines by inhibiting TLR4/NF-κB signaling pathway in isoproterenol-induced myocardial hypertrophy, and attenuates Toll-like receptor 4 expression via NF-κB pathway under high glucose condition in mesenchymal stem cells.^[6,7]

Astragaloside IV can inhibit adenovirus replication and apoptosis in A549 cells in vitro.^[8]

Astragaloside IV can inhibit doxorubicin-induced cardiomyocyte apoptosis mediated by mitochondrial apoptotic pathway via activating the PI3K/Akt pathway.^[9]

SOLVENT

Pyridine, Methanol, Ethanol, Hot water, etc.

HPLC METHOD (10)

Mobile phase: -H₂O=35:65 ;

Flow rate: 1.0 ml/min;

Column temperature: 35 °C;

Drift tube temperature: 95 °C;
Atomizer temperature: 50 °C;
Flow rate of nitrogen: 3.0 L/min.

STORAGE

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

REFERENCES

- [1] Xu X L, Chen X J, Ji H, et al. *Pharmacology*, 2008, 81(4):325-32.
- [2] Meng L, Tang J, Wang Y, et al. *Brit. J. Pharmacol.*, 2011, 162(8):1805-18.
- [3] Qi W, Niu J, Qin Q, et al. *Cell Stress & Chaperon*, 2014, 19(1):105-14.
- [4] Rong Z, Deng Y, Chen Y, et al. *Phytother. Res.*, 2012, 26(6):892-8.
- [5] Zhang N, Wang X H, Mao S L. *Molecules*, 2011, 16(5):3896-907.
- [6] Yang J, Wang H X, Zhang Y J, et al. *J. Ethnopharmacol.*, 2013, 150(3):1062-70.
- [7] Li M, Yu L, She T, et al. *Eur. J. Pharmacol.*, 2012, 696(1-3):203-9.
- [8] Shang L, Qu Z, Sun L, et al. *J. Pharm. Pharmacol.*, 2011, 63(5):688-94.
- [9] Jia Y, Zuo D, Li Z, et al. *Chem. Pharm. Bull.*, 2014, 62(1):45-53.
- [10] Liu Q, Zhongdong L I, Liu J, et al. *Chinese Journal of Modern Applied Pharmacy*, 2010(04):355-8.



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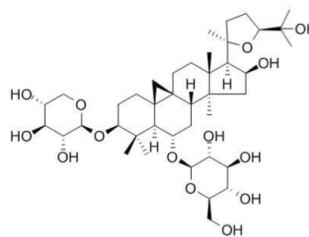
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CERTIFICATE OF ANALYSIS

Name: Astragaloside IV
Catalog No.: KRN99171
Cas No.: 84687-43-4
Purity: >=98%
M.F: C₄₁H₆₈O₁₄



Physical Description: White powder
Solvent: DMSO, Pyridine, Methanol, Ethanol, etc.
Weight 20 mg
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

Identification by ¹H-NMR, HPLC
Purity tested

Results

Consistent with the above structure
>=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: Astragaloside IV

Product code: KRN99171

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: Astragaloside IV

CAS#: 84687-43-4

Purity: >=98%

Formula: C₄₁H₆₈O₁₄

Molecular Weight: 784.98

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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