1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name: Aristolochic acid
Product Catalogue Number: 540028
Brand: MedKoo Biosciences
CAS-No: 313-67-7

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Laboratory chemicals, Synthesis of substances.

1.3 Details of the supplier of the safety data sheet

Company: MedKoo Biosciences, Inc.
2500 Gateway Centre Blvd. Suite 400, Morrisville, NC 27560, USA
Telephone: 919-636-5577
Fax: 919-980-4831

1.4 Emergency telephone number

Emergency Phone # 911 (in USA) or local emergency phone#

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Acute Toxicity, Oral (Category 3), H301
Carcinogenicity (Category 2), H351
For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram:

Signal word: Danger
Hazard statement(s)
H301: Toxic if swallowed.
H351: Suspected of causing cancer

Precautionary statement(s)
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P264: Wash skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P280: Wear protective gloves/ eye protection/ face protection.
P308 + P313: IF exposed or concerned: Get medical advice/ attention.
P405: Store locked up.
P501: Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none
3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
   Synonyms: Aristolochin; Birthwort; NSC-11926; NSC 11926; NSC11926; NSC-50413; NSC50413; NSC 50413; TR-1736; Aristolochic acid I; Aristolochic acid A; Tardolyt
   Formula: C\(_{17}\)H\(_{11}\)NO\(_7\)
   Molecular weight: 341.27
   CAS-No: 313-67-7313-67-7

Hazardous components

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aristolochic acid</td>
<td>Acute Tox. 3; Carc. 2; H301, H351</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures
   General advice
   Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
   If inhaled
   If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
   In case of skin contact
   Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
   In case of eye contact
   Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
   If swallowed
   Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
   The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
   No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media
   Suitable extinguishing media
   Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
   No data available

5.3 Advice for firefighters
   Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
   No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
   Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
   For personal protection see section 8.
6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place. Recommended storage temperature: 2 - 8 °C for short term (weeks to 3 months) or -20°C for long term (3 months to years). Keep in a dry place.

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

8. EXPOSURE CONTROLS/PERSO NAL PROTECTION

8.1 Control parameters
Components with workplace control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aristolochic acid</td>
<td>313-67-7/7313-67-7</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

**Splash contact**
- Material: Nitrile rubber
- Minimum layer thickness: 0.11 mm
- Break through time: 480 min

**Data source**
KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374. If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

**Body Protection**
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of environmental exposure**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

**9.1 Information on basic physical and chemical properties**
- a) Appearance Form: Color: light yellow to yellow
  - Form: solid 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) Upper/lower flammability or explosive limits: No data available
- k) Vapour pressure: No data available
- l) Vapour density: No data available
- m) Relative density: No data available
- n) Water solubility: No data available
- o) Partition coefficient: octanol/water: No data available
- p) Auto-ignition 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

**9.2 Other safety information**
10. STABILITY AND REACTIVITY

10.1 Reactivity: No data available

10.2 Chemical stability: Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions: No data available

10.4 Conditions to avoid: No data available

10.5 Incompatible materials: No data available

10.6 Hazardous decomposition products
   Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides (NOx)
   Other decomposition products - No data available
   In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

   Acute toxicity
   LD50 Oral - Rat - male and female - 183.9 - 203.4 mg/kg
   Inhalation: No data available.
   Dermal: No data available

   Skin corrosion/irritation: No data available
   Serious eye damage/eye irritation: No data available

   Respiratory or skin sensitisation
   Germ cell mutagenicity: No data available
   Hamster: No data available
   Lungs: No data available
   Cytogenetic analysis: No data available
   Mouse: No data available
   Micronucleus test: No data available

   Carcinogenicity
   IARC: 1 - Group 1: Carcinogenic to humans (8-Methoxy-3,4-methylenedioxy-10-nitrophenanthrene1-carboxylic acid).
   NTP: Known - Known to be human carcinogen (8-Methoxy-3,4-methylenedioxy-10-nitrophenanthrene-1-carboxylic acid).
   OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

   Reproductive toxicity
   Reproductive toxicity - Rat - No data available
   Maternal Effects: No data available
   Effects on Newborn: No data available
   Developmental Toxicity - Rat - No data available
   Specific Developmental Abnormalities: No data available

   Specific target organ toxicity - single exposure Inhalation - No data available.

   Specific target organ toxicity - repeated exposure: No data available

   Aspiration hazard: No data available
Additional Information
RTECS: CF3325000
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. ECOLOGICAL INFORMATION

12.1 Toxicity: No data available

12.2 Persistence and degradability: No data available

12.3 Bioaccumulative potential: No data available

12.4 Mobility in soil: No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects: No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 1544 Class: 6.1 Packing group: III
Sigma - A5512 Page 7 of 8
Proper shipping name: Alkaloids, solid, n.o.s. (8-Methoxy-3,4-methylenedioxy-10-nitrophenanthrene-1-carboxylic acid)
Reportable Quantity (RQ):
Poison Inhalation Hazard: No

IMDG:
UN number: 1544 Class: 6.1 Packing group: III EMS-No: F-A, S-A
Proper shipping name: ALKALOIDS, SOLID, N.O.S. (8-Methoxy-3,4-methylenedioxy-10-nitrophenanthrene-1-carboxylic acid)

IATA:
UN number: 1544 Class: 6.1 Packing group: III
Proper shipping name: Alkaloids, solid, n.o.s. (8-Methoxy-3,4-methylenedioxy-10-nitrophenanthrene-1-carboxylic acid)

15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 313.

**SARA 311/312 Hazards**
Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Revision data</th>
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<tbody>
<tr>
<td>Aristolochic acid</td>
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**Pennsylvania Right To Know Components**

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**New Jersey Right To Know Components**

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**California Prop. 65 Components**

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</tr>
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16. **OTHER INFORMATION**

**Full text of H-Statements referred to under sections 2 and 3.**

- **Acute Tox.** Acute toxicity
- **Aquatic Chronic** Chronic aquatic toxicity
- **Eye Dam.** Serious eye damage
- **Eye Irrit.** Eye irritation
- **Flam. Liq.** Flammable liquids
- **H225** Highly flammable liquid and vapour.
- **H301 + H311 + H331** Toxic if swallowed, in contact with skin or if inhaled
- **H315** Causes skin irritation.
- **H317** May cause an allergic skin reaction.
- **H318** Causes serious eye damage.
- **H319** Causes serious eye irritation.
- **H334** May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- **H335** May cause respiratory irritation.
- **H336** May cause drowsiness or dizziness.
- **H341** Suspected of causing genetic defects.
- **H361** Suspected of damaging fertility or the unborn child.
- **H370** Causes damage to organs.
- **H413** May cause long lasting harmful effects to aquatic life.
- **Muta.** Germ cell mutagenicity
- **Repr.** Reproductive toxicity
- **Resp. Sens.** Respiratory sensitisation
- **Skin Irrit.** Skin irritation
- **Skin Sens.** Skin sensitisation
STOT SE Specific target organ toxicity - single exposure

**HMIS Rating**
Health hazard: 2
Chronic Health Hazard: *
Flammability: 0
Physical Hazard 0

**NFPA Rating**
Health hazard: 2
Fire Hazard: 0
Reactivity Hazard: 0

**Further information**
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**Preparation Information**
MedKoo Biosciences, Inc.
Product Safety – multiple Region
Tel: 919-636-5577

Version: 3.11.  Revision Date: 12/3/2018  Print Date: 12/3/2018

---End of document ----