SAFETY DATA SHEET
Benidipine hydrochloride - Bio-X

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
Product name  Benidipine hydrochloride - Bio-X
Product number  FB64953

Synonyms; trade names  (4R)-rel-3,5-Pyridinedicarboxylic acid, 1,4-dihydro-2,6-dimethyl-4-(3-nitrophenyl)-, methyl (3R)-1-(phenylmethyl)-3-piperidinyl ester, monohydrochloride, KW 3049, Coniel

CAS number  91599-74-5
EC number  663-500-3

1.2. Relevant identified uses of the substance or mixture and uses advised against
Identified uses  Laboratory reagent. Manufacture of substances. Research and development.

1.3. Details of the supplier of the safety data sheet
Supplier  Carbosynth Ltd
8&9 Old Station Business Park
Compton
Berkshire
RG20 6NE
UK
+44 1635 578444
+44 1635 579444
info@carbosynth.com

1.4. Emergency telephone number
Emergency telephone  +44 7887 998634

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification (EC 1272/2008)
Physical hazards  Not Classified
Health hazards  Acute Tox. 3 - H301
Environmental hazards  Not Classified

2.2. Label elements
EC number  663-500-3

Pictogram

Signal word  Danger
**Benidipine hydrochloride - Bio-X**

**Hazard statements**

H301 Toxic if swallowed.

**Precautionary statements**

P270 Do not eat, drink or smoke when using this product.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

P501 Dispose of contents/container in accordance with national regulations.

**2.3. Other hazards**

No data available.

**SECTION 3: Composition/information on ingredients**

**3.1. Substances**

**Product name** Benidipine hydrochloride - Bio-X

**CAS number** 91599-74-5

**EC number** 663-500-3

**Chemical formula** C₂₈H₃₁N₃O₆·HCl

**SECTION 4: First aid measures**

**4.1. Description of first aid measures**

**General information** Get medical advice/attention if you feel unwell.

**Inhalation** Remove person to fresh air and keep comfortable for breathing. If breathing stops, provide artificial respiration. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Get medical attention if symptoms are severe or persist.

**Ingestion** Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth thoroughly with water. Give plenty of water to drink. Get medical attention if symptoms are severe or persist.

**Skin contact** Remove contaminated clothing. Rinse with water. Continue to rinse for at least 15 minutes. Wash contaminated clothing before reuse. Get medical attention if symptoms are severe or persist.

**Eye contact** Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes. Get medical attention if symptoms are severe or persist.

**4.2. Most important symptoms and effects, both acute and delayed**

**General information** See Section 11 for additional information on health hazards.

**4.3. Indication of any immediate medical attention and special treatment needed**

**Notes for the doctor** Treat symptomatically.

**SECTION 5: Firefighting measures**

**5.1. Extinguishing media**

**Suitable extinguishing media** Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.

**5.2. Special hazards arising from the substance or mixture**

**Specific hazards** None known.

**Hazardous combustion products** Thermal decomposition or combustion products may include the following substances: Oxides of carbon. Oxides of nitrogen. Hydrogen chloride (HCl).

**5.3. Advice for firefighters**
Benidipine hydrochloride - Bio-X

Special protective equipment for firefighters
Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Firefighter's clothing conforming to European standard EN469 (including helmets, protective boots and gloves) will provide a basic level of protection for chemical incidents. Use protective equipment appropriate for surrounding materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Personal precautions
Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. Do not touch or walk into spilled material. Avoid inhalation of dust and vapours. Provide adequate ventilation. Eliminate all sources of ignition. Keep unnecessary and unprotected personnel away from the spillage.

6.2. Environmental precautions
Environmental precautions
Avoid discharge into drains or watercourses or onto the ground.

6.3. Methods and material for containment and cleaning up
Methods for cleaning up
Wear protective clothing as described in Section 8 of this safety data sheet. Collect powder using special dust vacuum cleaner with particle filter or carefully sweep into suitable waste disposal containers and seal securely. Clear up spills immediately and dispose of waste safely. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. For waste disposal, see Section 13.

6.4. Reference to other sections
Reference to other sections
For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Usage precautions
Wear protective clothing as described in Section 8 of this safety data sheet. Wash hands thoroughly after handling. Provide adequate ventilation. Avoid generation and spreading of dust. Avoid contact with skin and eyes. Avoid inhalation of dust and vapours. Eliminate all sources of ignition. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities
Storage precautions
Keep container tightly closed. Store in a cool and well-ventilated place. Store at temperatures not exceeding -20°C.

7.3. Specific end use(s)
Specific end use(s)
The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure Controls/personal protection

8.1. Control parameters
Occupational exposure limits
No exposure limits known for ingredient(s).

8.2. Exposure controls
Appropriate engineering controls
Provide adequate ventilation. Observe any occupational exposure limits for the product or ingredients.

Eye/face protection
Unless the assessment indicates a higher degree of protection is required, the following protection should be worn: Tight-fitting safety glasses. Personal protective equipment for eye and face protection should comply with European Standard EN166.
Benidipine hydrochloride - Bio-X

Hand protection

Wear protective gloves. To protect hands from chemicals, gloves should comply with European Standard EN374.

Other skin and body protection

Wear appropriate clothing to prevent repeated or prolonged skin contact.

Respiratory protection

Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible. Ensure all respiratory protective equipment is suitable for its intended use and is ‘CE’-marked. Particulate filter, type P2. Particulate filters should comply with European Standard EN143. Full face mask respirators with replaceable filter cartridges should comply with European Standard EN136. Half mask and quarter mask respirators with replaceable filter cartridges should comply with European Standard EN140.

Environmental exposure controls

Keep container tightly sealed when not in use.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

<table>
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<th>Property</th>
<th>Data</th>
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<td>Appearance</td>
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<tr>
<td>explosive limits</td>
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<td>Vapour pressure</td>
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<td>Methanol. Almost insoluble in the following</td>
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<tr>
<td></td>
<td>Chloroform. Insoluble in the following</td>
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<td>materials: Toluene Ethyl Acetate</td>
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<td>Decomposition Temperature</td>
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<td>Viscosity</td>
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<td>Explosive properties</td>
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<td>Oxidising properties</td>
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</table>

9.2. Other information

Molecular weight 542.02
### SECTION 10: Stability and reactivity

10.1. Reactivity

**Reactivity**
No data available.

10.2. Chemical stability

**Stability**
Stable under the prescribed storage conditions.

10.3. Possibility of hazardous reactions

**Possibility of hazardous reactions**
No data available.

10.4. Conditions to avoid

**Conditions to avoid**
No data available.

10.5. Incompatible materials

**Materials to avoid**
Strong oxidising agents.

10.6. Hazardous decomposition products

**Hazardous decomposition products**

### SECTION 11: Toxicological information

11.1. Information on toxicological effects

**Acute toxicity - oral**

- **Acute toxicity oral (LD₅₀ mg/kg)**: 87.6
- **Species**: Rat
- **Notes (oral LD₅₀)**: Acute Tox. 3 - H301 Toxic if swallowed.
- **ATE oral (mg/kg)**: 87.6

**Acute toxicity - dermal**

- Notes (dermal LD₅₀): Based on available data the classification criteria are not met.

**Acute toxicity - inhalation**

- Notes (inhalation LC₅₀): Based on available data the classification criteria are not met.

**Skin corrosion/irritation**

- Animal data: Based on available data the classification criteria are not met.

**Serious eye damage/irritation**

- Based on available data the classification criteria are not met.

**Respiratory sensitisation**

- Based on available data the classification criteria are not met.

**Skin sensitisation**

- Based on available data the classification criteria are not met.

**Germ cell mutagenicity**

- Based on available data the classification criteria are not met.

**Genotoxicity - in vitro**

- Based on available data the classification criteria are not met.

**Carcinogenicity**

- Based on available data the classification criteria are not met.
Benidipine hydrochloride - Bio-X

IARC carcinogenicity
No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
Reproductive toxicity - fertility
Based on available data the classification criteria are not met.
Reproductive toxicity - development
Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure
STOT - single exposure
Not classified as a specific target organ toxicant after a single exposure.

Specific target organ toxicity - repeated exposure
STOT - repeated exposure
Not classified as a specific target organ toxicant after repeated exposure.

Aspiration hazard
Not relevant. Solid.

General information
Dust may irritate the eyes and the respiratory system. The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

Inhalation
Dust may irritate the respiratory system. Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases.

Ingestion
May cause stomach pain or vomiting. May cause severe internal injury.

Skin contact
Prolonged contact may cause dryness of the skin.

Eye contact
Dust may cause slight irritation.

Route of exposure
Ingestion Inhalation Skin and/or eye contact

Target organs
No specific target organs known.

RTECS #
US7975657

SECTION 12: Ecological Information

Ecotoxicity
Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment.

12.1. Toxicity
Toxicity
Based on available data the classification criteria are not met.

12.2. Persistence and degradability
Persistence and degradability
The degradability of the product is not known.

12.3. Bioaccumulative potential
Bioaccumulative potential
No data available on bioaccumulation.

Partition coefficient
No data available.

12.4. Mobility in soil
Mobility
No data available.

12.5. Results of PBT and vPvB assessment
Results of PBT and vPvB assessment
No data available.

12.6. Other adverse effects
Benidipine hydrochloride - Bio-X

Other adverse effects

None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information
Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority. This material and its container must be disposed of in a safe way. When handling waste, the safety precautions applying to handling of the product should be considered.

SECTION 14: Transport information

14.1. UN number

UN No. (ADR/RID) 2811
UN No. (IMDG) 2811
UN No. (ICAO) 2811
UN No. (ADN) 2811

14.2. UN proper shipping name

Proper shipping name (ADR/RID) TOXIC SOLID, ORGANIC, N.O.S. (Benidipine hydrochloride)
Proper shipping name (IMDG) TOXIC SOLID, ORGANIC, N.O.S. (Benidipine hydrochloride)
Proper shipping name (ICAO) TOXIC SOLID, ORGANIC, N.O.S. (Benidipine hydrochloride)
Proper shipping name (ADN) TOXIC SOLID, ORGANIC, N.O.S. (Benidipine hydrochloride)

14.3. Transport hazard class(es)

ADR/RID class 6.1
ADR/RID classification code T2
ADR/RID label 6.1
IMDG class 6.1
ICAO class/division 6.1
ADN class 6.1

Transport labels

14.4. Packing group

ADR/RID packing group III
IMDG packing group III
ADN packing group III
ICAO packing group III

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.
Benidipine hydrochloride - Bio-X

14.6. Special precautions for user

<table>
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<td>(ADR/RID)</td>
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<tr>
<td>Tunnel restriction code</td>
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</tbody>
</table>

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

SECTION 15: Regulatory information

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

**National regulations**
- Health and Safety at Work etc. Act 1974 (as amended).
- The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (SI 2009 No. 1348) (as amended) ["CDG 2009"].
- EH40/2005 Workplace exposure limits.

**EU legislation**

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

**Abbreviations and acronyms used in the safety data sheet**
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
- ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
- RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
- IATA: International Air Transport Association.
- CAS: Chemical Abstracts Service.
- ATE: Acute Toxicity Estimate.
- LC₅₀: Lethal Concentration to 50 % of a test population.
- LD₅₀: Lethal Dose to 50% of a test population (Median Lethal Dose).
- EC₅₀: 50% of maximal Effective Concentration.
- PBT: Persistent, Bioaccumulative and Toxic substance.
- vPvB: Very Persistent and Very Bioaccumulative.

**Training advice**
Only trained personnel should use this material.

**Revision date** 29/04/2019

**Revision** 1

**SDS number** 144926
Benidipine hydrochloride - Bio-X

Hazard statements in full

H301 Toxic if swallowed.