

## Safety Data Sheet

### 1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Human Chromogranin A EIA Kit  
Product number: YK070  
Manufacturer: YANAIHARA INSTITUTE, INC.  
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### 2. HAZARDS IDENTIFICATION

#### GHS classification

Classification of the substance or mixture 7), 8)

Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 1A
Skin sensitization	Category 1
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 1, 2, 3
Category 1	respiratory system, cardiovascular system, kidneys, nervous system
Category 2	blood system
Category 3	respiratory tract irritation, narcotic effects
Specific target organ toxicity (repeated exposure)	Category 1
Category 1	respiratory system, lung, cardiovascular system, liver, digestive system, blood system, kidneys, pancreas, thymus, central nervous system
Germ cell mutagenicity	Category 2
Carcinogenicity	Category 2
Aquatic environment (acute hazard)	Category 2
Aquatic environment (long-term hazard)	Category 2

#### Pictograms



Signal word            Danger

#### Hazard statements

H314 - Causes severe skin burns and eye damage  
H317 - May cause an allergic skin reaction  
H318 - Causes serious eye damage  
H332 - Harmful if inhaled

H335 - May cause respiratory irritation  
H336 - May cause drowsiness or dizziness  
H341 - Suspected of causing genetic defects  
H351 - Suspected of causing cancer  
H370 - Causes damage to the following organs: respiratory system  
H371 - May cause damage to the following organs: blood system  
H372 - Causes damage to the following organs through prolonged or repeated exposure:  
respiratory system  
H401 - Toxic to aquatic life  
H411 - Toxic to aquatic life with long lasting effects

**Precautionary statements-(Prevention)**

Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.  
Do not breathe dust/fumes/gas/mist/vapors/spray.  
Wash face, hands and any exposed skin thoroughly after handling.  
Do not eat, drink or smoke when using this product.  
Use only outdoors or in a well-ventilated area.  
Contaminated work clothing should not be allowed out of the workplace.  
Avoid release to the environment.  
Wear protective gloves/protective clothing/eye protection/face protection.  
Use personal protective equipment as required.

**Precautionary statements-(Response)**

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
IF ON SKIN: Wash with plenty of soap and water  
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
If exposed or concerned: Get medical advice/attention.  
Immediately call a POISON CENTER or doctor/physician.  
Call a POISON CENTER or doctor/physician if you feel unwell.  
If skin irritation or a rash occurs: Get medical advice/attention.  
Wash contaminated clothing before reuse.  
Collect spillage.

**Precautionary statements-(Storage)**

Store locked up  
Store in a well-ventilated place. Keep container tightly closed.

**Precautionary statements-(Disposal)**

Dispose of contents/container to an approved waste disposal plant

**Others**

Other hazards Not available

Other reagents may be harmful if inhaled and ingested. May cause eye and skin irritation.

### 3. COMPOSITION, INFORMATION ON INGREDIENTS

<b>Product Name</b>	<b>CAS Number</b>
Human Chromogranin A EIA Kit (Human CgA EIA)	None

#### Kit components:

No.	Component	Quantity	Chemical name	Wt%	CAS No.	Chemical Formula
1)	Antibody coated plate	1 plate	Plate coated with goat anti rabbit IgG antibody ①			
2)	CgA Standard	100 pmol	Synthetic human CgA(344-374) ②			
3)	Labeled antigen	30 ng/vial	Biotinylated human CgA(344-374) ③			
4)	Specific antibody	1 vial	Rabbit anti human CgA(344-374) antibody ④			
5)	SA-HRP solution	12 mL	HRP labeled Streptavidin⑤			
6)	Substrate buffer	25 mL	Hydrogen peroxide ⑥	0.015%	7722-84-1	H2O2
			Citric acid, monohydrate ⑦	0.7%	5949-29-1	C6H8O7·H2O
			Disodium hydrogenphosphate 12-water ⑧	2.39%	10039-32-4	Na2HPO4·12H2O
7)	OPD tablet	2 tablets	o-Phenylenediamine dihydrochloride⑨	13mg	615-28-1	C6H4(NH2)2 2HCL
8)	Stopping solution	12 mL	Sulfuric acid (1M) ⑩	9.69%	7664-93-9	H2SO4
9)	Buffer solution (Concentrated)	12 mL	Phosphate buffer with non specific reaction blocker ⑪			
10)	Washing solution (Concentrated)	50 mL	Sodium chloride ⑫	18%	7647-14-5	NaCl
			Polyoxyethylene sorbitan monolaurate (Tween20) ⑬	1%	9005-64-5	C58H114O26
11)	Adhesive foil	3 sheets				

### 4. FIRST AID MEASURES

**Inhalation:** Immediately remove victim to fresh air. Consult a physician if necessary.

**Eye contact:** Immediately flush eyes with flooding amounts of running water for at least 15 minutes. Consult a physician if necessary.

**Skin contact:** Immediately remove contaminated clothes and shoes, flush skin with plenty of water or shower. Wash contaminated clothing and shoes. Consult a physician if necessary.

**Ingestion:** Immediately seek medical attention.

### 5. FIRE FIGHTING MEASURES

**Flammable properties:** Nonflammable

**Extinguishing media:** Foam, Carbon dioxide, dry chemical powder, soil, water

**Fire fighting instructions:** May emit toxic fumes under fire conditions. Wear full fire fighting protective equipment including self-contained breathing apparatus. Do not contact to the components when extinguish fire.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions:** Remove all ignition sources and ventilate. Wear suitable protective equipment. Avoid contact with skin and eyes. Keep off except persons concerned.

**Environmental precautions:** Prevent spills from entering sewers, watercourses or low area, and prevent from affecting environment.

**Methods for Clean up:** In case of spill of liquid material, take up or cover spilled material with ashes or other incombustible absorbents, and put in a container to be sealed. After completely picked up, dispose. In case of spill of solid or powder

material, prevent causing dust, sweep and collect, and put in a container to be sealed. Wash the spill site with water.

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## 7. HANDLING AND STORAGE

- Handling:** Obtain a package insert before use.  
Read all the cautions for safety in the package insert before use.  
Avoid strong light.  
Avoid contact, inhalation and swallow.  
Use only in open air or ventilated area.  
Prevent from entering eyes.  
Ventilate the area to keep concentration in air below exposure limits.  
Avoid inhalation of mist, vapor and spray of material.  
Avoid contact with eyes, skin and clothing.  
Do not smoke and eat while using this kit.  
Wash hands thoroughly after handling.  
Prevent from entering environment.  
Handle materials with suitable protection.  
Use suitable equipments.  
Do not pipette by mouth.  
Do not leak, overflow and scatter.  
Do not fall down and damage.
- Storage:** Store away from sunlight in a cool and dark place at 36-47°F (2-8°C).

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## 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

**Engineering measures:** General ventilation and/or local exhaust ventilation as well as process isolation is necessary to minimize employee exposure and maintain exposure limits below exposure limits. Equip eye flushing facilities and shower rooms near operating place where this kit is handled or stored.

**Control parameter:**

- ⑥ ACGIH TLV(s); TWA= 1 ppm
- ⑦ Administrative control level 3.0/0.59Q +1 mg/m<sup>3</sup>, Japan Society of Occupational Health(JSOH) 1 mg/m<sup>3</sup>
- ⑨ ACGIH; TWA=0.1mg/m<sup>3</sup>
- ⑩ OSHA Final Limits; TWA= 1 mg/m<sup>3</sup>  
JSOH (Japan); TWA= 1 mg/m<sup>3</sup>  
ACGIH TLV(s); TWA= 0.2 mg/m<sup>3</sup>

**Personal protection:**

- Respiratory protection; NIOSH and MSHA approved respirator.
- Hand protection; Suitable impervious gloves.
- Eye protection; Suitable safety glasses (goggles).
- Skin protection; Suitable protective clothing.

**Others:** Wash hands thoroughly after handling materials.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Component	1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)
Appearance	Colorless plate	White color, lyophilized powder	White color, lyophilized powder	White color, lyophilized powder	Orange color, Liquid	Colorless transparent, Liquid	White tablet	Colorless transparent, Liquid	Light yellow color, Liquid	Colorless transparent, Liquid	Colorless transparent Polymer sheet
pH	N/A	N/A	N/A	N/A	D/N/A	5.0	N/A	<1.0	7.0	D/N/A	N/A
Melting point	N/A	D/N/A	D/N/A	D/N/A	N/A	N/A	D/N/A	N/A	N/A	N/A	N/A
Boiling point	N/A	N/A	N/A	N/A	D/N/A	D/N/A	N/A	D/N/A	D/N/A	D/N/A	N/A
Flash point	N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	N/A
Explosive limits	N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	N/A
Vapor pressure	N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	N/A
Vapor density (air=1)	N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	N/A
Specific gravity	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A
Solubility in water	Insoluble	Soluble	Soluble	Soluble	Mixable	Mixable	Soluble	Mixable	Mixable	Mixable	Insoluble
Decomposition temperature	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	D/N/A	N/A

N/A.: Not applicable;  
 D/N/A: data not available

## 10. STABILITY AND REACTIVITY

**Chemical stability:** Product is stable under normal handling.  
**Shelf life:** Stable up to 12 months after manufacturing.  
**Hazardous polymerization:** Will not occur.  
**Conditions to avoid:** Extremes of temperature and direct sunlight, heat, flames and sparks, static electricity, spark  
**Incompatibility with other materials:** Alkaline substances, metals, strong oxidizing agents  
**Hazardous decomposition products:** Sulfur oxides(SO<sub>x</sub>), Carbon monoxide(CO), carbon dioxide(CO<sub>2</sub>), Nitrogen oxides(NO<sub>x</sub>), Hydrogen chloride(HCl) gas

## 11. TOXICOLOGICAL INFORMATION

Information as the mixture is not available.

Acute toxicity:

- 6) Hydrogen peroxide (oral, rat); LD50=311mg/kg  
 Hydrogen peroxide (dermal, rat); LD50=4060mg/kg, Content=0.015%  
 Disodium hydrogenphosphate 12-water (oral, rat); LD50=17000mg/kg  
 Citrate acid (dermal, rabbit); LD50=1260mg/kg  
 Citric acid (oral, rat); LD50=3000mg/kg  
 ATE=284985  
 Not classified
- 7) o-Phenylenediamine dihydrochloride; No data available.
- 8) Sulfuric acid (inhalation, rat); 2H LC50=510mg/m<sup>3</sup>  
 (oral, rat) LD50=2140mg/kg  
 Category 4  
 Hazard statement; Harmful if inhaled.  
 Content=9.69%
- 10) Tween 20 (oral, rat); LD50=37000mg/kg

Sodium chloride (oral, rat); LD50=3000mg/kg  
Not classified

**Skin corrosion/irritation:**

- 6) Disodium hydrogenphosphate 12-water (skin, rabbit); 500mg/24H, Mild  
Citric acid (skin, rabbit); 500mg/24H, Weak  
Hydrogen peroxide (skin); R-phase(s)=R35 (causes severe burns),  
Content=0.015%  
Not classified
- 7) o-Phenylenediamine dihydrochloride; No data available.
- 8) Sulfuric acid; Based on the NITE GHS classification.  
Category 1A  
Hazard statement; Causes severe skin burns and eye damage.  
Content=9.69%
- 10) Tween 20 (skin, human); 15mg/3days, Mild  
Sodium chloride (skin, rabbit); 500mg/24H, Mild  
Category 3  
Hazard statement; Skin irritant.

**Serious eye damage/irritation:**

- 6) Disodium hydrogenphosphate 12-water (eye, rabbit); 500mg/24H, Mild  
Citric acid (eye, rabbit); 0.75mg/24H, Severe  
Hydrogen peroxide (eye, animal); Severe corrosive. Content=0.015%.  
Not classified
- 7) o-Phenylenediamine dihydrochloride; No data available.
- 8) Sulfuric acid; Based on the NITE GHS classification results.  
Category 1  
Hazard statement; Causes serious eye damage.  
Content=9.69%
- 10) Tween 20 (eye); R-phase(s)=R36 (Irritating to eyes)  
Sodium chloride (eye, rabbit); 100mg/24H, Medium  
Category 2B  
Hazard statement; Causes eye irritation.

**Respiratory or skin sensitization:**

**Respiratory sensitization**

- 7) o-Phenylenediamine dihydrochloride; No data available  
Category 1  
Hazard statement; May causes respiratory irritation.
- 8) Sulfuric acid; No data available.

**Skin sensitization**

- 7) o-Phenylenediamine dihydrochloride; No data available.  
Category 1  
Hazard statement; May causes an allergic skin reaction.
- 8) Sulfuric acid; No data available.

**Germ cell mutagenicity:**

- 7) o-Phenylenediamine dihydrochloride; No data available.  
Category 2  
Hazard statement; Suspected of causing genetic defects.
- 8) Sulfuric acid; No data available.

**Carcinogenicity:**

- 6) Hydrogen peroxide; IARC group 3 (substances which cannot be classified to human carcinogens). ACGIH group A3 (confirmed as animal carcinogen and relation to human is not unknown)  
Other ingredients; Not classified.
- 7) o-phenylenediamine dihydrochloride; ACGIH: A3(2001)  
Category 2  
Hazard statement; Suspected of causing cancer.
- 8) Sulfuric acid; Occupational exposure to mist of inorganic strong acids including sulfuric acid are classified to group 1 in IARC (to have carcinogenicity for human ), group A2 in ACGIH (suspected human carcinogens) and group K in NTP (known to have carcinogenicity for human). With respect for the evaluation by IARC and current evaluation by NTP, it should be classified to category 1, however since sulfuric acid itself is classified to Category 4 in DFGOT and is not classified to carcinogen by any other organization, component 8) can not be classified.

**Reproductive toxicity:**

- 6) Hydrogen peroxide; In vitro experiment, effects to human sperm was seen. In animals, although no descriptions for general toxicity for parental animals, there are descriptions of effects to sperm motility, female estrous cycle, and decrease in number of maternal animals to give birth and decrease in body weight of newborn animals. Content=0.015%  
Other ingredients; Information not available.  
Component 6) can not be classified.
- 7) o-Phenylenediamine dihydrochloride; No data available.
- 8) Sulfuric acid; No data available.

**Specific target organ systemic toxicity/Single exposure:**

- 6) Hydrogen peroxide; Irritation in nose, throat and respiratory duct for human and animals. Congestion in lung and trachea, lung edema, pulmonary emphysema, epithelium necrosis of trachea in animal within the guidance value ranges of Category 1 were described. In human, headache, dizziness, tremor, spasm, benumbedness, faint and brain infarction were described.  
Content=0.015%  
Other ingredients; Information not available.

- Component 6) can not be classified.
- 7) o-Phenylenediamine dihydrochloride; No data available.  
Category 2 blood system  
Category 3 respiration tract irritation, narcotic effects  
Hazard statement; May cause damage to the following organs: blood system.  
May cause respiratory irritation. May causes drowsiness or dizziness.
- 8) Sulfuric acid; Based on the NITE GHS classification results.  
Category 1 respiratory system  
Hazard statement; Causes damage to the following organs: respiratory system.  
Content=9.69%

Specific target organ systemic toxicity/Repeated exposure:

- 6) Hydrogen peroxide (human); Irritative to lung.  
Hydrogen peroxide (dog); Fibrous tissue nidus in lung appeared frequently and mixture of atelectasis and emphysema fields were recognized within the dose of the guidance value ranges of Category 1 in the inhalation test of vapor.  
Hydrogen peroxide (oral, rat); Effects to white blood cell count and hematocrit value, and hemolysis were seen within the dose of the guidance value ranges of Category 2.  
Content=0.015%

Other ingredients; Information not available.

- Component 6) can not be classified.  
Hazard statement; Causes irritation to respiratory organs.
- 7) o-Phenylenediamine dihydrochloride; No data available.
- 8) Sulfuric acid; Based on the NITE GHS classification results.  
Category 1 respiratory system  
Hazard statement; Causes damage to respiratory system with long term or repeated exposure: respiratory system.  
Content=9.69%

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## 12. ECOLOGICAL INFORMATION

Information as the mixture is not available.

Aquatic environmental toxicity/Acute phase:

- 6) Hydrogen peroxide; In crustaceans (Ceriodaphnia quadrangula), 48H  
LC50=2.4mg/L  
Disodium hydrogenphosphate 12-water; Information not available.  
Citric acid; In algae, 72H LC50=80mg/L  
Component 6) is not classified since estimated value of acute aquatic environmental toxicity with the simple adding method, 0.85%<25%.
- 7) o-Phenylenediamine dihydrochloride; No data available.  
Hazard statement; Toxic to aquatic life.
- 8) Sulfuric acid; In fish (Bluegill), 96H LC50=16-28mg/L  
Daphnia magna 24H EC50=29mg/L  
Hazard statement; Harmful to aquatic life.



Aquatic environmental toxicity/Chronical phase:

- 7) o-Phenylenediamine dihydrochloride; No data available.  
Hazard statement: Toxic to aquatic life with long lasting effects.
- 8) Sulfuric acid; Based on the NITE GHS classification results.

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13. DISPOSAL CONSIDERATIONS

Dispose of all waste material including containers in accordance with all applicable laws and local environmental regulations.

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14. TRANSPORT INFORMATION

IATA: As a mixture, the substance is subjected to no limitations.

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15. REGULATORY INFORMATION

International Inventories

EINECS/ELINCS	Listed
TSCA	Listed

Japanese regulations

Fire Service Act; Not applicable

Poisonous and Deleterious Substances Control Law; Not applicable

Industrial Safety and Health Act;

Group 3 Specified Chemical Substance, (Ordinance on Prevention of Hazards Due to Specified Chemical Substances Art.2 Para.1, Item 6)  
Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57, Para.1, Enforcement Order Art.18)  
Notifiable Substances (Law Art.57-2, Enforcement Order Art.18-2 No.613)

Mutagens - Existing Chemicals Substances with Health Hazards Prevention Guideline (Carcinogenicity Substance)

Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.;

Priority Assessment Chemical Substances (Law Article 2, Para.5)

Regulations for the carriage and storage of dangerous goods in ship;

Corrosive Substances, Noxious Substances (Ordinance Art.3, Ministry of Transportation Ordinance Regarding Transport by Ship and Storage)

Civil Aeronautics Law;

Corrosive Substances, Miscellaneous Dangerous Substances and Articles (Ordinance Art.194, MITL Notification for Air Transportation of Explosives etc.)

Air pollution Control Law; Specified substance

EU Directive 1999/45/EC; classification, packaging and labeling of dangerous Preparations

SYMBOL : C as component 8)

R-phrases : 35 as component 8)

S-phrases : 26-45 as component 8)

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

In case of accident or if you feel unwell, seek medical advice immediately.

EC index No. : ⑥=008-003-00-9, ⑩=016-020-00-8  
Other ingredients=Not listed.

Follow all the regulations in your country.

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## 16. OTHER INFORMATION

### Reference

- 1) Internal data of Yanaihara Institute, Inc.
- 2) Chemwathch MSDS
- 3) RTECS (2006)
- 4) EU RAR (2003)
- 5) SIDS (2001)
- 6) Environmental Risk Assessment of Chemicals Vol.3 (Ministry of environment, Japan) (2004)
- 7) ATSDR (1998)
- 8) SIDS (2001)
- 9) DFDS (2001)
- 10) EU- RAR (2002)
- 11) SIDS (2003)
- 12) CERI-NITE Hazard Assessment Report (2005)
- 13) NTP DB (Access on Dec., 2005)
- 14) Narotsky and Kavlock (1995)
- 15) EHC 161 (1994)
- 16) MSDS by Wako Pure Chemical Industries, Ltd.
- 17) ECETOC JACC (1993)
- 18) ACGIH (2001)
- 19) NITE Biodegradation and Bioconcentration of the Existing Chemical Substances
- 20) PHYSPROP Database (2005)
- 21) IUCLID (2000)
- 22) HSDB (2006)
- 23) JSOH Recommendation of Occupational Exposure Limits (1993)
- 24) IARC (1992)
- 25) ACGIH (2004)

### Key literature references and sources for data etc.:

NITE: National Institute of Technology and Evaluation (JAPAN) <http://www.safe.nite.go.jp/japan/db.html>  
IATA dangerous Goods Regulations RTECS: Registry of Toxic Effects of Chemical Substances Japan  
Industrial Safety and Health Association GHS Model SDS Dictionary of Synthetic Organic Chemistry,  
SSOCJ, Koudansha Scientific Co.Ltd. Chemical Dictionary, Kyouritsu Publishing Co., Ltd. etc.

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