FINAL REPORT(Draft)

Eye Irritation Study of Water that passed through the Waters Therapy Shower in Rabbits

Study No. : GT11-00002

April 2011

the way to trust KCL 한국건설생활환경시험연구원 Korea Conformity Laboratories

Bioconvergence Technology Dept.

STATEMENT

Study No. : GT11-00002

Study title : Eye Irritation Study of Water that passed through the Waters Therapy Shower in Rabbits

This final report was written in Korean and translated into English.

This study was carried out in compliance with the test method of Korea Food & Drug Administration (KFDA) [Notice No. 2009-116, (Revised 24th August, 2009)], OECD Guidelines for the Testing of Chemicals (24 April 2002) TG 405 Acute Eye Irritation/Corrosion and SOPs of KCL (KCL/EIT/002)

The test article information such as identity, strength, purity, composition or other characterization is the responsibility of the study sponsor.

5 April, 2011

Study director : (sign)

Confirmed by

Management : (sign)

Bioconvergence Technology Dept., Korea Conformity Laboratories

QUALITY ASSURANCE STATEMENT

Study No. : GT10-00080

Title : Eye Irritation Study of Water that passed through the Waters Therapy Shower

This study was subject to audit by the independent Quality Assurance Unit of KCL as indicated below. The findings of each audit were reported to the study director and management as prescribed by Standard Operating Procedures.

The final report audit was designed to confirm that as far as can be reasonably established the methods described and results incorporated in the final report accurately reflect the raw data produced during the study.

Audit phases and dates reported to the responsible personnel were as indicated below and these were based upon the audit records.

Phase Inspected	Date	Reports to Study Director	Reports to Management
Study Plan	2010. 08. 17	2010. 08. 17	2010. 08. 18
Storage of Test substance and vehicle	2010. 08. 24	2010. 08. 24	2010. 08. 26
Animal receipt	2010. 08. 19	2010. 08. 19	2010. 08. 19
Preparation of test substance	2010. 08. 31	2010. 08. 31	2010. 08. 31
	2010. 09. 07	2010. 09. 07	2010. 09. 07
Animal care and Administration	2010. 08. 31	2010. 08. 31	2010. 08. 31
	2010. 09. 07	2010. 09. 07	2010. 09. 07
Clinical sign	2010. 08. 31	2010. 08. 31	2010. 08. 31
	2010. 09. 07	2010. 09. 07	2010. 09. 07
Eye irritation/corrosion evaluation	2010. 09. 28	2010. 09. 28	2010. 09. 28
Raw data	2010. 10. 14	2010. 10. 14	2010. 10. 14
Final Report	2010. 10. 14	2010. 10. 14	2010. 10. 14

QA director : Won-Kwen Kuk, Ph.D. Date : 2010.10.14

Auditor, Quality Assurance

Study Personnel

Animal experiment	Hyeon-Yeol Ryu	**Date**	28 March 2010
Preparation of test substance	Byung-Gil Choi	**Date**	28 March 2010
Animal care	Sang-Sik Lee	**Date**	28 March 2010
Archives	Mi-Ra Han	**Date**	28 March 2010

1. Sponsor

Name	: WATERS.Co.,Ltd
A person in charge	: Sung-Taek Lim
Address	: Manhatan B/D., 36-2, Youido-dong, Youngdeungpo-ku Seoul, KOREA
Contact	: +82.2-783-5206(Tel), +82.2-783-3498(Fax)

2. Testing facility

Name	: Bioconvergence Technology Dept., Korea Conformity Laboratories
Address	: 7-44, Songdo-dong, Yeonsu-gu, Incheon, Korea

3. Study director

Name	: Hyeon-Yeol Ryu
Address	: 7-44, Songdo-dong, Yeonsu-gu, Incheon, Korea
Phone	: +82-32-858-0011(Tel), +82-32-858-0020(Fax)

4. Schedule

Study initiation	:	28 January 2011
Animal acquisition	:	07 February 2011
Administraion	:	14 February 2011
Experimental Completion	:	21 February 2011
Final report	:	28 March 2011

5. Archive of data and specimens

1) Duration : 5 years after the completion of the study
2) Data : Study plan, data related test substance, data related animal acquisition, raw data, final report, document of GLP, document of correspondences and specimens
3) Storage facility : The depository(126-06) and specimen depository of Bioconvergence Technology Dept., Korea Conformity Laboratories

Contents

1. SUMMARY

This study was performed to evaluate ocular irritation potential of Water that passed through the Waters Therapy Shower in nine male New Zealand White Rabbits. The test substance was dropped in the conjunctival sac of one eye of rabbit at dosage 0.1 ㎖. After application of test substance in rinsed (for 3 animals) & nonrinsed (for 6 animals) group, ocular irritation was measured by the test method of Korea Food & Drug Administration (KFDA) [Notice No. 2009-116, (Revised 24th August, 2009)] for ocular irritation of conea, iris and conjunctiva depending on times at (1, 2, 3, 4, and 7 days).

The results were as follows;

1) No clinical signs and mortalities related to test substance treatment were observed.
2) No significant body weight changes related to test substance treatment were observed.
3) There was no ocular irritation of conea, iris and conjunctiva at all rinsed & nonrinsed group animals for test periods.

On the basis of the above results, Water that passed through the Waters Therapy Shower on eye application of New Zealand White rabbit was classified as a non irritant (The index of acute ocular irritation was 0.0).

2. TEST SUBSTANCE AND VEHICLE

1) Test substance [Annex 1]

(1) Name : Water that passed through the Waters Therapy Shower
(2) CAS No. : No relevant data
(4) Molecular Weight : No relevant data
(5) Lot No. : 20110105
(6) Received date : 18 January 2011
(7) Received quantity : 639.88 g (including container)
(8) Appearance : liquid
(9) Purity : 100% (Water itself was considered as the test substance.)
(10) Storage condition : refrigeration
(11) Stability : Store in sealed for prevention of bacteria infection
(12) Caution and storage method : Do not mixed with base
(13) Supplier : WATERS.Co.,Ltd

2) Preparation of test substance

The test substance was weighed took the volume as 0.1 ㎖ each. The stability analysis test was not performed because the test substance was prepared on the day of administration.

3) Storage and Treatment

For the duration of the study, test substance were kept in a refrigerator in storage room (108-4).

3. MATERIALS AND METHODS

(1) Species and strain

Specific Pathogen Free (SPF) New Zealand White (NZW) rabbits. **[Annex 2]**

(2) Supplier

Samtako BIO KOREA Co., Ltd.
(Address; 77-1 Seorang-dong, Osan-si, Gyeonggi-do, Korea)

(3) Species selection Justification

The NZW rabbits used in this study are widely used in general ocular irritation experiments for toxicity testing. In addition, sufficient raw data associated with this species has been accumulated and is available for interpretation and evaluation of study results.

(4) Date of the acquisition : 08 February 2011

(5) Number of received animals : 10 males

(6) Age and body weights on arrival :2234.12~2446.12 g, 10 weeks

(7) Quarantine and acclimation **[Annex 3]**

On arrival, animals were examined based on the certificate provided by the supplier. The period of acclimation was 7 days.

(Only healthy animals were used for the tests after observing general symptoms in the acclimated period.)

(8) Age and body weight at Administration : 2407.42~2839.78g, 11 weaks

(9) Number of animals administered test substance :

Rinsed group : 3 male rabbits, Non-rinsed group : 6 male rabbits, total 9 male rabbits

(10) Identification of animals

Each animal is identified for this study by a unique number marked indelibly on the inner surface of the ear and written on the cage label. Information about animals and study was also posted on the door of the animals room.

(11) Grouping

After selection animals having 2.0 to 3.0 kg weigh, animals with no corneal injury were used in this study using the eye examination (Slit lamp, ECONOM SET, GERMANY), within 24 hours, before administration.

(12) Disposal of remaining animals

All remaining animals were euthanized by CO_2 on experimental completion day.

2) Animal Care Facility [**Annex 4**]

(1) Room No. : Animal care room for rabbits No. 1

(2) Range of temperature and humidity during test work

Temperature of 20.4 ~ 21.6 ℃, Relative humidity of 43.5 ~ 48.5 %

(3) Ventilation frequency : 10 ~ 15 air changes/hr.

(4) Lighting cycle : 12 hrs lighting duration (lighting on at 8 a.m. ~ lighting off at 8 p.m.)

(5) Lighting intensity : 286 Lux.

(6) Ambient noise level : 57.2 dB

(7) Ammonia concentration : less than 5 ppm

(8) Housing

All animals were individually housed in stainless steel cages (380W×500D×330H mm) during the test period.

(9) Feed

① Type : Laboratory rabbit diet

② Producer : Agribrands Purina Korea Inc.

(Address: 8th Floor Hanlimwon Building, 7-1, Gu Mi-Dong, Bun

Dang-Gu, Sung Nam-Shi, Kyong Gi-Do, Korea)

③ Supply method : *ad libitum*

④ Analysis

The data analyzed by the feed supplier was used.

No significant factors to affect the experimental results were found. **[Annex 5]**

(10) Water

① Type : Incheon, Korea municipal tap water purified by reverse osmosis filtering system.

② Supplying method : *ad libitum*

③ Analysis

Performed by national certificated inspection organization.

No significant factors to affect the experimental results were found. **[Annex 6]**

3) Method

(1) Application method

① Route of administraion & group description

Nine healthy male animals were devided into rinsed & non-rinsed group. Each of Rinsed & non-rinsed group were composed of three animals and six animals. The test substance was administered to the left conjunctival sac. The right eye remained as control without treatment of the test substance.

② Application method

The test substance was applied in a left conjuctival sac. after then, to prevent leakage of the test substance, held on both eyelids for 1~2 seconds.

At rinsed group, both of eyes were rinsed with a sterile saline during 20~30 seconds After application of 0.1 ㎖ test substance in left eye. However, non-rinsed group did not performed these procedure.

(2) Determination of volume

The volume of test substance administered in this study was determined in accordance with OECD Guidelines for the Testing of Chemicals (24 April 2002) TG 405 Acute Eye Irritation/Corrosion.

(3) Observations

① Clinical signs

Clinical signs including general appearance and mortality were observed every day until study termination.

② Body weight

Body weight was measured before test substance application, and at 1, 2, 3, 4 and 7 days after application.

③ Observation of application site

The eyes were examined ocular irritation of conea, iris and conjunctiva at 1, 2, 3, 4 and 7 days after removal of test substance.

④ Evaluation of eye irritation

The eye responses were scored at each examination time according to 'Grading of ocular lesions', OECD TG No. 405 Acute Eye Irritation/Corrosion and SOPs of KCL (KCL/EIT/001). M.I.O.I. (Mean index of ocular irritation) was calculated with I.I.O.I. (The individual index of ocular irritation) of 1, 2, 3, 4 and 7 days hours observation score (Table 3). The maximum value of M.I.O.I. is I.A.O.I. (The index of acute ocular irritation). The ocular irritation was classified with I.A.O.I. according to 'Decision table of eye irritaion'. In order to determine reversibility, observation was performed until the lesions clear.

※ Grading of ocular lesions

(1) Cornea

(A) Opacity : Degree of Density(area which is most dense is taken for reading)

Scattered or diffuse area-details of iris clearly visible	1
Easily discernible translucent areas. Details of iris slightly obscured	2
Opalescent areas no details of iris visible, size of pupil barely discernible	3
Opaque. Iris invisible	4

(B) Area of Cornea Involved

One quarter (or less) but not zero	1
Greater than one quarter-less than one-half	2
Greater than one one-half less than three quarters	3
Greater than one quarters up to whole area	4

A × B × 5 Total maximum 50

(2) Iris

(A) Values

Folds above normal, congestion, swelling, circumcorneal injection(any one or all of these or combination of any thereof), iris still reacting to light (sluggish reaction is posibive)	1
No reaction to light, hemorrhage, gross destruction (any one or all of these)	2

A × 5 Total maximum 10

(3)Conjunctivae

(A) Redness(refers to palpebral conjunctivae only)

Vessels definitely injected above normal	1
Vessels definitely congestion	2
More diffuse deeper crimson red individual vessels not easily discernible	3
Diffuse beefy red	4

(B) Edema

Any swelling above normal (includes nictitating membrane)	1
Obvious swelling with partial eversion of lids	2
Swelling with lids about half closed	3
Swelling with lids about half closed to completely closed	4

(C) Discharge

Any amount different from normal (does not include small amounts observed in inner canthus of normal animals)	1
Discharge with moistening of the lids and hairs just adjacent to the lids	2
Discharge with moistening of the lids and considerable area around the eye	3

(A + B + C) × 2 Total maximum 20

※ Decision table of eye irritaion

The index of acute ocular iritation (I.A.O. I.)	Evaluation
0 ~ 5	Non Irritant
5 ~ 15	Mild Irritant
15 ~ 30	Moderate Irritant
30 ~ 60	SevereIrritant
60 ~ 80	Extreme Irritant
80 ~ 110	Maximal Irritant
※ I.I.O.I (The individual index of ocular irritaion) = (A× B× 5) + (C×5) +(D+E+F) × 2	
※ M.I.O.I (Mean index of ocular irritaion)	
※ I.A.O.I (The index of acute ocular irritaion) = the maximum value of MOI	

4. RESULTS

1) Mortality and clinical signs (Table 1)

No significant clinical signs and mortalities were observed during this study.

2) Body weight changes (Table 2)

After treatment with the test substance, a slight decrease in body weight were observed in all animals caused by stress. However, it was temporary and soon recovered. there was no any other weight change for the experimental periods.

3) Observation of application site (Table 3)

(1) Rinse group animals

There was no specific change in left eyes due to the test substance application at 1, 2, 3, 4, and 7 days. Right eyes as a control were same at the experimental periods.

(2) Non-rinsed group animals

There was no specific change in left eyes due to the test substance application at 1, 2, 3, 4, and 7 days. Right eyes as a control were same at the experimental periods.

4) Determination of irritantion **(Table 4)**

(1) Rinse group animals

① M.I.O.I. (Mean index of ocular irritaion) of left eye (test substance application site) were determined as 0.0 at 1, 2, 3, 4, and 7 days. Right eye (control site) were 0.0.

② I.A.O.I. (The index of acute ocular irritaion, as a maximum value for M.I.O.I.) of left eye (test substance application site) were determined as 0.0 at 1, 2, 3, 4, and 7 days. Right eye (control site) were 0.0.

(2) Non-rinsed group animals

① M.I.O.I. (Mean index of ocular irritaion) of left eye(test substance application site) were determined as 0.0 at 1, 2, 3, 4, and 7 days. Right eye (control site) were 0.0.

② I.A.O.I. (The index of acute ocular irritaion, maximum value for M.I.O.I.) of left eye(test substance application site) were determined as 0.0 at 1, 2, 3, 4, and 7 days. Right eye (control site) were 0.0.

5. DISCUSSION AND CONCLUSION

To evaluate ocular irritation potential of Water that passed through the Waters Therapy Shower Wed, nine male NZW rabbits were used to this study. After application of the test substance into the conjunctival sac at dosage 0.1㎖, the mortality, clinical signs, the change of the body weight, irritant signs of eyes were evaluated.

As a result, there were no mortality, abnormal clinical sign and body weight change induced by test substance treatment.

There no specific observation result of the test substance applied area in both rinsed and non-rinsed group animals at 1, 2, 3, 4, and 7 days. They were same in control sites.

In conclusion, through the test conditions like this study, Application of Water that passed through the Waters Therapy Shower Wed showed no mortality and body weight change in male New Zealand White rabbit and eye irritation (I.A.O.I.) were determined as 0.0 (Non Irritant) in both rinsed and non-rinsed group animals followed by 『Table 3. Evaluation of eye irritation』.

On the basis of the above results, on eye application of Water that passed through the Waters Therapy Shower Wed in new Zealand White rabbit was classified as a none irritant.

6. REFERENCES

1) Korea Food & Drug Administration (KFDA) Notice No. 2009-116 'Standard of toxicity test in pharmaceutical, etc. products',(Revised 24th Nov. 2009)

2) OECD Guidelines for the Testing of Chemicals No. 405 'Acute Eye Irritation/Corrosion' (Adopted 24th April 2002)

3) Draize JH, Woodard G and Calvery HO. (1944) : Methods for the study of irritation and toxicity of substances applied topically to the skin and mucous membranes. J Pharmacol Exp Ther, 82:377-390.

4) Draize, J.H. (1959) : Dermal toxicity. Assoc. Food and Drug Officials, U.S. Appraisal of the Safety of Chemicals in Food, Drugs and Cosmetics. pp. 46 ~ 59, Texas State Dept. of Health, Austin, Texas.

7. 표 (Tables)

Table 1. Mortality and clinical signs

MORTALITY AND CLINICAL SIGNS			
STUDY : GT11-00002			SEX : MALE
	No. of animals	Mortality (%)	Clinical signs
	9	0	No clinical signs

Table 2. Body weight changes

BODY WEIGHTS (g)							
STUDY : GT11-00002							SEX : MALE
		Days after treatment					
	Animal No.	0-day	1-day	2-day	3-day	4-day	7-day
Rinsed	02-1	2477.72	2511.89	2489.93	2575.04	2530.72	2527.24
	02-2	2839.78	2830.35	2829.84	2857.43	2825.03	2840.06
	02-3	2723.29	2753.78	2753.35	2779.39	2788.78	2690.79
Nonrinsed	02-4	2625.17	2638.57	2655.24	2691.34	2700.80	2742.33
	02-5	2586.92	2594.00	2652.14	2684.18	2648.18	2688.15
	02-6	2771.82	2759.20	2832.54	2830.34	2834.16	2818.58
	02-7	2783.12	2794.11	2812.77	2812.89	2866.37	2904.80
	02-8	2407.42	2437.87	2426.96	2503.07	2481.94	2570.73
	02-9	2473.02	2215.99	2149.09	2102.51	2048.72	2443.26
	Mean	2632.03	2615.08	2622.43	2648.47	2636.08	2691.77
	S.D.	156.32	200.23	229.76	236.81	258.72	153.91
	N	9	9	9	9	9	9

Table 3. Evaluation of eye irritation

EVALUATION OF EYE IRRITATION

STUDY : GT11-00002 SEX : MALE

Group			Rinsed				Nonrinsed				
Animal No.			02-1	02-2	02-3	02-4	02-5	02-6	02-7	02-8	02-9
Cornea	Degree of opacity (A)	1day	0	0	0	0	0	0	0	0	0
		2day	0	0	0	0	0	0	0	0	0
		3day	0	0	0	0	0	0	0	0	0
		4day	0	0	0	0	0	0	0	0	0
		7day	0	0	0	0	0	0	0	0	0
	Diffuse areas of opacity (B)	1day	0	0	0	0	0	0	0	0	0
		2day	0	0	0	0	0	0	0	0	0
		3day	0	0	0	0	0	0	0	0	0
		4day	0	0	0	0	0	0	0	0	0
		7day	0	0	0	0	0	0	0	0	0
Iris (C)		1day	0	0	0	0	0	0	0	0	0
		2day	0	0	0	0	0	0	0	0	0
		3day	0	0	0	0	0	0	0	0	0
		4day	0	0	0	0	0	0	0	0	0
		7day	0	0	0	0	0	0	0	0	0
Conjunctiva	Redness(D)	1day	0	0	0	0	0	0	0	0	0
		2day	0	0	0	0	0	0	0	0	0
		3day	0	0	0	0	0	0	0	0	0
		4day	0	0	0	0	0	0	0	0	0
		7day	0	0	0	0	0	0	0	0	0
	Edema (E)	1day	0	0	0	0	0	0	0	0	0
		2day	0	0	0	0	0	0	0	0	0
		3day	0	0	0	0	0	0	0	0	0
		4day	0	0	0	0	0	0	0	0	0
		7day	0	0	0	0	0	0	0	0	0
	Discharge(F)	1day	0	0	0	0	0	0	0	0	0
		2day	0	0	0	0	0	0	0	0	0
		3day	0	0	0	0	0	0	0	0	0
		4day	0	0	0	0	0	0	0	0	0
		7day	0	0	0	0	0	0	0	0	0
I.I.O.I		1day	0	0	0	0	0	0	0	0	0
		2day	0	0	0	0	0	0	0	0	0
		3day	0	0	0	0	0	0	0	0	0
		4day	0	0	0	0	0	0	0	0	0
		7day	0	0	0	0	0	0	0	0	0
M.I.O.I		1day		0.0[a)]				0.0			
		2day		0.0				0.0			
		3day		0.0				0.0			
		4day		0.0				0.0			
		7day		0.0				0.0			

※ L : Test treatment ※ R : Control

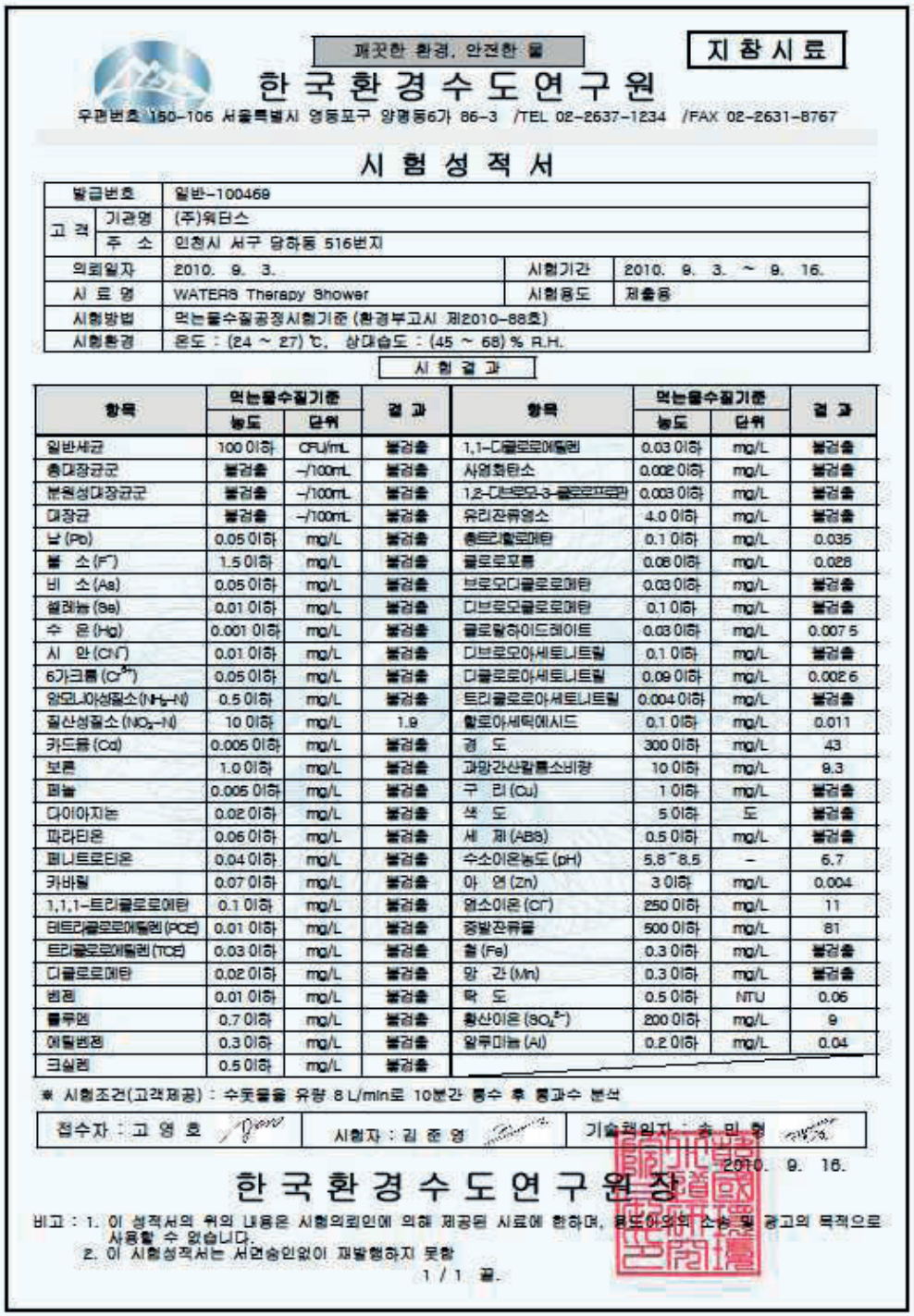
I.I.O.I (The individual index of ocular irritation) = (A× B× 5) + (C×5) +(D+E+F) × 2

M.I.O.I (Mean index of ocular irritation) : from 1day to 7day

[a)] I.A.O.I (The index of acute ocular irritation) = the maximum value of M.I.O.I

9. Annex

Annex 1. Test substance chemical data sheet



깨끗한 환경, 안전한 물

지 참 시 료

한 국 환 경 수 도 연 구 원

우편번호 150-106 서울특별시 영등포구 양평동6가 86-3 /TEL 02-2637-1234 /FAX 02-2631-8767

시 험 성 적 서

발급번호		일반-100469		
고 객	기관명	(주)워터스		
	주 소	인천시 서구 당하동 516번지		
의뢰일자		2010. 9. 3.	시험기간	2010. 9. 3. ~ 9. 16.
시 료 명		WATER8 Therapy Shower	시험용도	제출용
시험방법		먹는물수질공정시험기준 (환경부고시 제2010-88호)		
시험환경		온도 : (24 ~ 27) ℃, 상대습도 : (45 ~ 68) % R.H.		

시 험 결 과

항목	먹는물수질기준 농도	단위	결 과	항목	먹는물수질기준 농도	단위	결 과
일반세균	100 이하	CFU/mL	불검출	1,1-디클로로에틸렌	0.03 이하	mg/L	불검출
총대장균군	불검출	-/100mL	불검출	사염화탄소	0.002 이하	mg/L	불검출
분원성대장균군	불검출	-/100mL	불검출	1,2-디브로모-3-클로로프로판	0.003 이하	mg/L	불검출
대장균	불검출	-/100mL	불검출	유리잔류염소	4.0 이하	mg/L	불검출
납 (Pb)	0.05 이하	mg/L	불검출	총트리할로메탄	0.1 이하	mg/L	0.035
불 소 (F^-)	1.5 이하	mg/L	불검출	클로로포름	0.08 이하	mg/L	0.028
비 소 (As)	0.05 이하	mg/L	불검출	브로모디클로로메탄	0.03 이하	mg/L	불검출
셀레늄 (Se)	0.01 이하	mg/L	불검출	디브로모클로로메탄	0.1 이하	mg/L	불검출
수 은 (Hg)	0.001 이하	mg/L	불검출	클로랄하이드레이트	0.03 이하	mg/L	0.007 5
시 안 (CN^-)	0.01 이하	mg/L	불검출	디브로모아세토니트릴	0.1 이하	mg/L	불검출
6가크롬 (Cr^{6+})	0.05 이하	mg/L	불검출	디클로로아세토니트릴	0.09 이하	mg/L	0.002 6
암모니아성질소 (NH_3-N)	0.5 이하	mg/L	불검출	트리클로로아세토니트릴	0.004 이하	mg/L	불검출
질산성질소 (NO_3-N)	10 이하	mg/L	1.9	할로아세틱에시드	0.1 이하	mg/L	0.011
카드뮴 (Cd)	0.005 이하	mg/L	불검출	경 도	300 이하	mg/L	43
보론	1.0 이하	mg/L	불검출	과망간산칼륨소비량	10 이하	mg/L	9.3
페놀	0.005 이하	mg/L	불검출	구 리 (Cu)	1 이하	mg/L	불검출
다이아지논	0.02 이하	mg/L	불검출	색 도	5 이하	도	불검출
파라티온	0.06 이하	mg/L	불검출	세 제 (ABS)	0.5 이하	mg/L	불검출
페니트로티온	0.04 이하	mg/L	불검출	수소이온농도 (pH)	5.8 ~ 8.5	-	6.7
카바릴	0.07 이하	mg/L	불검출	아 연 (Zn)	3 이하	mg/L	0.004
1,1,1-트리클로로에탄	0.1 이하	mg/L	불검출	염소이온 (Cl^-)	250 이하	mg/L	11
테트라클로로에틸렌 (PCE)	0.01 이하	mg/L	불검출	증발잔류물	500 이하	mg/L	81
트리클로로에틸렌 (TCE)	0.03 이하	mg/L	불검출	철 (Fe)	0.3 이하	mg/L	불검출
디클로로메탄	0.02 이하	mg/L	불검출	망 간 (Mn)	0.3 이하	mg/L	불검출
벤젠	0.01 이하	mg/L	불검출	탁 도	0.5 이하	NTU	0.06
톨루엔	0.7 이하	mg/L	불검출	황산이온 (SO_4^{2-})	200 이하	mg/L	9
에틸벤젠	0.3 이하	mg/L	불검출	알루미늄 (Al)	0.2 이하	mg/L	0.04
크실렌	0.5 이하	mg/L	불검출				

※ 시험조건(고객제공) : 수돗물을 유량 8 L/min로 10분간 통수 후 통과수 분석

접수자 : 고 영 호 시험자 : 김 준 영 기술책임자 : 송 민 형

2010. 9. 16.

한 국 환 경 수 도 연 구 원 장

비고 : 1. 이 성적서의 위의 내용은 시험의뢰인에 의해 제공된 시료에 한하며, 용도이외의 소송 및 광고의 목적으로 사용할 수 없습니다.
2. 이 시험성적서는 서면승인없이 재발행하지 못함

1 / 1 끝.

FPC05-2B(9) Korea Environment & Water Works Institute A4(210×297)

Annex 2. Certification of strain

SAMTAKO

CERTIFICATE OF STRAIN

Place of birth	Samtako Bio Korea	IBRS # 102
Purchaser	한국건설생활환경시험연구원	
Delivery date	2011-02-08	
Monitoring result	As attached sheet	
Details		
Production Facility	Outbred Rabbit (SPF)	
Temperature & Humidity	16 -22°C / 30~70%	
New Zealand White Rabbit (NZW)		
ILAR Code	Sam:NZW	
Sex	Male	
Age (Weight)	10 Weeks (2.0kg)	
Date of birth	2010.11.30 - 2010.12.02	
Number of animals	17 Heads	
Model Description	The industry standard SPF New Zealand White to meet your specific study objectives. Samtako's NZW Rabbits are produced in autonomous production units. They exhibit high productivity, constant growth rates, and docile dispositions.	
Origin & History	Samtako's New Zealand White Rabbits were received breeder stock from Commercial Breeder in 2001. The stock is maintained using a non - B×S mating system.	
Color	White	

We hereby certify the strain of the animals and their background as follows.

원본대조필

JaeYoung Choi, D.V.M

SAMTAKO BIO KOREA

Annex 3. Animal health monitering report

Taconic

Smart Solutions To Improve Human Health

7876 Standish Place, Rockville, MD 20855 • Tel: 301.762.0366 • Fax: 301.762.7438 • www.taconic.com

EVALUATION

Rabbit (6):Sam IBRS 102

ACCESSION NUMBER

98859

SPONSOR

Samtako Bio Korea

STUDIES CONDUCTED

HEAS-110-RAB: Core Health Assessment - Rabbit
MICRO-020: Presence of dermatophytes
MICRO-022: Conjunctiva
SERO-201-230: Core Panel - Rabbit

Steven M. Stiefel, DVM
Sr. Scientist Pathology

Cynthia A. Smith
Office Administrator

12/21/2010
Date

원본대조필

Taconic

7676 Blandish Place, Rockville, MD 20855 • Tel 301.762.0366 • Fax 301.762.7438 • www.taconic.com

SUMMARY PAGE

Client:	Samtako Bio Korea	Accession No.	98859
Species:	Rabbit (6)	Date Received:	12/02/2010
Group Designation:	Sam IBRS 102	Date Completed:	12/21/2010

Services Performed: HEAS-110-RAB - Core Health Assessment - Rabbit
MICRO-020 - Presence of dermatophytes
MICRO-022 - Mycoplasma by Conjunctiva Swab
SERO-201-230 - Core Panel - Rabbit

INTRODUCTION

There were 6 adolescent, albino, female rabbits submitted for a Core Diagnostic Screen. Serum samples were drawn from these rabbits at the time of necropsy for a Core Rabbit Serologic Profile.

RESULTS AND INTERPRETATION

The results of the Core Diagnostic Screen are summarized in Table 1. Results of the evaluation of serum for the presence of viral antibodies are presented in Table 2. A complete description of all tests is provided in Table 3.

No rabbit pathogens in the viral, mycoplasmal, helminth, protozoan or arthropod groups were isolated or otherwise detected.
It is brought to the reader's attention that the serum of 1/6 rabbits was (+) for antibodies to *Cilia Associated Respiratory Bacillus* (CARB) by ELISA testing. Retesting that sample by IFA gave (-) results. This profile was interpreted as representing a false (+) CARB ELISA result for that sample. The colony should be regarded as free of all other primary rabbit pathogens in the test profile.

Taconic

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TABLE I
DIAGNOSTIC SCREEN RESULTS

Client:	Samtako Bio Korea	Accession No.	98859
Species:	Rabbit (6)	Date Received:	12/02/2010
Group Designation:	Sam IBRS 102	Date Completed:	12/21/2010

1) Physical Examination: A group of adolescent, albino, female rabbits with a mean body weight = 2.15 kg were presented for diagnosis. The animals arrived in a filtered shipping carton and were clinically normal in terms of posture and activity. No discharges from the nares, conjuctiva or anus were noted. Euthanasia was conducted in a sterile polycarbonite plastic chamber prior to blood sample collection.

2) Necropsy dissection:	NGL NGL NGL NGL NGL NGL
3) Fecal Flotation for Helminth Ova and Coccidia	Negative Negative Negative Negative Negative Negative
4) Fecal culture	No Salmonella, Klebsiella or Citrobacter No Salmonella, Klebsiella or Citrobacter No Salmonella, Klebsiella or Citrobacter No Salmonella, Klebsiella or Citrobacter No Salmonella, Klebsiella or Citrobacter No Salmonella, Klebsiella or Citrobacter
5) Direct cecum:	No Helminths No Helminths No Helminths No Helminths No Helminths No Helminths
6) Pathogenic Bacteria:	None None None None None None
7) Middle ear exam:	No exudates No exudates No exudates No exudates No exudates No exudates

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TABLE 1
DIAGNOSTIC SCREEN RESULTS

Client:	Samtako Bio Korea	Accession No.	98859
Species:	Rabbit (6)	Date Received:	12/02/2010
Group Designation:	Sam IBRS 102	Date Completed:	12/21/2010

8) Pelage	No arthropods No arthropods No arthropods No arthropods No arthropods No arthropods
9) Presence of dermatophytes	Negative Negative Negative Negative Negative Negative
10) Conjunctiva Sample	Negative Negative Negative Negative Negative Negative

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TABLE 2
SEROLOGY RESULTS

Client: Sumtako Bio Korea
Species: Rabbit (6)
Group Designation: Sam IBRS 102
Accession No.: 98859
Date Received: 12/02/2010
Date Completed: 12/21/2010

NOTE: Values and/or findings will be identified with a '*' and footnoted with the Customer ID.

Target Organism	Test Method	Results	Findings
CAR Bacillus (CARB)	ELISA	1/6	*
CAR Bacillus (CARB)	IFA	0/1	
Encephalitozoon cuniculi (ECUN)	ELISA	0/6	
Pasteurella multocida (PMUL)	IFA	0/6	
Treponema cuniculi (TREP)	RPR	0/6	

Tests marked with an asterisk (*):
CARB-E-1+/

It is brought to the reader's attention that the serum of 1/6 rabbits was (+) for antibodies to *Cilia Associated Respiratory Bacillus* (CARB) by ELISA testing. Retesting that sample by IFA gave (-) results. This profile was interpreted as representing a false (+) CARB ELISA result for that sample.

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TABLE 3
TEST PANEL DESCRIPTIONS

CORE HEALTH ASSESSMENT: The full range of clinical examinations, gross necropsy, microbiologic isolations and histopathology to isolate or otherwise detect the presence of the following microorganisms:

(a) Arthropod ectoparasites

Psoroptes cuniculi (ear mite),
Cheyletiella parasitovorax,
Listrophorus gibbus

(b) Helminth endoparasites
Passalurus ambiguus
Taenia pisiformis

(c) Protozoans

Eimeria stiedae (hepatic coccidiosis),
Eimeria perforans, Eimeria irresidum,
and others (intestinal coccidiosis),
Encephalitozoon cuniculi

(d) Bacteria

Pasteurella multocida,
Pasteurella pneumotropica,
Treponema cuniculi,
Clostridium piliformis

(e) Viruses

Oral papilloma (wart) virus

Core Rabbit Serologic Profile: A battery of viral agents whose presence is detected by various tests for antibodies in serum. The presence of the virus in the colony may be inferred by (+) antibody findings.

Rabbit Panel (SERO-201-230)	Virus Name
CARB	CAR Bacillus
ECUN	Encephalitozoon cuniculi
PMUL	Pasteurella multocida
TREP	Treponema cuniculi

Annex 4. Environment Certification for animal care room

동물사육실 환경증명서

시험번호	GT11-00002
시험제목	토끼를 이용한 WATERS THERAPY SHOWER 통과수의 안점막자극시험
동물실험실	토끼사육실
동물사육기간	2011년 02월 07일 ~ 2011년 02월 21일

환경조건

구 분	SOP 관리 범위	실측치	비고
온 도	22±3 ℃	21.0±0.6 ℃	
습 도	50±20 %RH	46.0±2.5 %RH	
조 도	150~300 Lux	286 Lux	
소 음	60 dB 이하	56.0dB	
암모니아	15 ppm 이하	5 ppm 이하	

상기 시험의 시험기간 동안 위의 설정치를 2시간 이상 벗어나는 환경의 변화가 없었음을 증명합니다.

시설관리 책임자 백 동 석 (인)

2011년 03 월 10일

Annex 5. Laboratory animal diet certification

Cargill Agri Purina Korea Inc.
Analysis Service of Central Laboratory
627 Jangdang-dong, Pyongtaek-si
Kyonggi-do, 459-020 Seoul, Korea
Tel (031)669-9060 Fax (031)667-3642

ANALYSIS RESULT

LAB NO. 170089 ENTERED August 23, 2010 REPORTED September 28, 2010

38302-AF	RABBIT BIR-C
PRODUCTION	8/11/10 KSN Plant
LOT NO.	KSN100811SPB

ASSAY	ANALYSIS	UNIT
NUTRIENTS		
MOISTURE(OVEN)	12.11	%
PROTEIN(PROTEIN ANALYZER)	15.09	%
FAT(ETHER EXT)	2.93	%
FIBER(ANKOM)	13.74	%
ASH(FURNACE)	9.89	%
CALCIUM(AAS)	1.42	%
PHOSPHORUS(COLORMETRIC)	0.62	%
HEAVY METALS		
As(ICP)	Not detected	ppm
Cd(ICP)	0.37	ppm
Hg(MERCURY ANALYZER)	Not detected	ppb
Pb(ICP)	0.25	ppm
Se(ICP)	0.22	ppm
AFLATOXIN(ELISA)		
B1, B2, G1, G2	0.68	ppb
CHLORINATED HYDROCARBON		
DDT(GC)	Not detected	ppm
ORGANOPHOSPHATES		
MALATHION(GC)	Not detected	ppm
Microbial Tests		
Salmonella	Not detected	mm
Total Bacteria	310000	cfu/g
E. Coli	Not detected	-
PHYSICAL PROPERTIES		
PELLET SIZE(DxL)	5.66 * 10.78	mm
PELLET COLOR	Green	-
HARDNESS	8.36	kg/cm^2

THE LETTER CODE LOCATED BELOW EACH ASSAY IS A METHOD REFERENCE CODE.
FOR ADDITIONAL INFORMATION CONTACT MR. LEE, NAM JIN, CENTRAL LABORATORY MANAGER. (031-669-9060)

PREPARED BY Koo, Jae Yeon CONFIRMED BY Lee, Nam Jin

The Term "Less Than" is used to signify the lower limit of quantitation of the procedure under the conditions employed. The use of the term "Less Than" does not imply that traces of analyte were present. Samples submitted to Central Laboratory Services for routine analysis will be retained for a minimum of thirty(30) days after the report of analysis is issued. Extended storage requirements must be brought to the attention of Central Laboratory services prior to or at the time of sample submission.

원본대조필

Annex 6. Certification of water analysis

the way to trust KCL

시 험 성 적 서

접 수 번 호 : DW10-00802
신 청 인 : 한국건설생활환경시험연구원(인천)
주 소 : 인천 연수구 송도동 7-44
시 료 명 : 바이오융합본부 동물실

접 수 일 자 : 2010.09.07
시험완료일 : 2010.10.06
용 도 : 거래처 제출

시험결과

첨 부 시 험 분 석 결 과 표 와 같 음.

비고 1. 이 성적서는 신청인이 제시한 시료 및 시료명으로 시험한 결과로서 전체제품에 대한 품질을 보증하지는 않습니다.
2. 이 성적서는 우리 연구원의 사전 서면동의 없이 홍보, 선전, 광고 및 소송용으로 사용될 수 없으며, 용도 이외의 사용을 금합니다.

시험원 : 원성민 기술책임자(부) : 김준호

2010년 10월 6일

한국건설생활환경시험연구원

본원 : 153-803 서울 금천구 가산동 459-28 (02)2102-2500
결과문의 : 환경분석팀 02-2102-2596

총 3 페이지 중 1 페이지

the way to trust KCL

시험성적서

접 수 번 호 : DW10-00802

시 험 항 목	단 위	수질기준	정량한계	시 험 결 과
일반세균	CFU/mL	100 이하	0	0
총대장균군	-/(100mL)	불검출	-	불검출
대장균	-/(100mL)	불검출	-	불검출
납	mg/L	0.05 이하	0.04	불검출
비 소	mg/L	0.05 이하	0.005	불검출
세레늄	mg/L	0.01 이하	0.005	불검출
카드뮴	mg/L	0.01 이하	0.002	불검출
보 론	mg/L	0.3 이하	0.01	불검출
동	mg/L	1.0 이하	0.008	불검출
아 연	mg/L	1.0 이하	0.002	0.002
철	mg/L	0.3 이하	0.05	불검출
망 간	mg/L	0.3 이하	0.005	불검출
알루미늄	mg/L	0.2 이하	0.02	불검출
수 은	mg/L	0.001 이하	0.001	불검출
불 소	mg/L	1.5 이하	0.15	불검출
질산성질소	mg/L	10 이하	0.1	0.5
염소이온	mg/L	250 이하	0.4	2
황산이온	mg/L	200 이하	2	불검출
다이아지논	mg/L	0.02 이하	0.0005	불검출
파라티온	mg/L	0.06 이하	0.0005	불검출
페니트로티온	mg/L	0.04 이하	0.0005	불검출
디클로로메탄	mg/L	0.02 이하	0.003	불검출
1,1,1-트리클로로에탄	mg/L	0.1 이하	0.003	불검출
벤 젠	mg/L	0.01 이하	0.002	불검출
톨루엔	mg/L	0.7 이하	0.002	불검출
에틸벤젠	mg/L	0.3 이하	0.002	불검출
크실렌	mg/L	0.5 이하	0.002	불검출
1,1-디클로로에틸렌	mg/L	0.03 이하	0.002	불검출
사염화탄소	mg/L	0.002 이하	0.002	불검출
테트라클로로에틸렌	mg/L	0.01 이하	0.002	불검출
트리클로로에틸렌	mg/L	0.03 이하	0.002	불검출
1,2-디브로모-3-클로로프로판	mg/L	0.003 이하	0.001	불검출
카바릴	mg/L	0.07 이하	0.0005	불검출
6가크롬	mg/L	0.05 이하	0.02	불검출
암모니아성 질소	mg/L	0.5 이하	0.01	불검출
페 놀	mg/L	0.005 이하	0.005	불검출
세 제	mg/L	0.5 이하	0.1	불검출

총 3 페이지 중 2 페이지

the way to trust KCL

시 험 성 적 서

접 수 번 호 : DW10-00802

시 험 항 목	단 위	수질기준	정량한계	시 험 결 과
시 안	mg/L	0.01 이하	0.01	불검출
수소이온농도	-	5.8~8.5	-	7.0
탁 도	NTU	1 이하	0.02	0.16
색 도	도	5 이하	1	불검출
맛	-	무미	-	없 음
냄 새	-	무취	-	없 음
경 도	mg/L	300 이하	1	불검출
과망간산칼륨 소비량	mg/L	10 이하	0.3	0.3
증발잔류물	mg/L	500 이하	2	27
판 정		적 합		
시 험 방 법		먹는 물 수질공정시험기준(환경부고시 제2010-88호)		

- 이 하 여 백 -

총 3 페이지 중 3 페이지

Annex 7. GLP certificate

지정번호(Certification No.) 제 18 호

비임상시험관리기관 지정서
GLP Certificate

시 험 기 관 : 한국생활환경시험연구원 안전성평가본부
Test Facility(ies) Name : Bio-safety Evaluation Headquarters, Korea Environment & Merchandise Testing Institute
소 재 지 : 인천광역시 연수구 송도동 7-44
Address : 7-44, Songdo-dong, Yeonsu-gu, Incheon, Republic of korea
대 표 자 : 박갑록 (주민등록번호 : 460706-1675917)
President : Kap-Rok Park (Personal No. : 460706-1675917)
운 영 책 임 자 : 유일재 (주민등록번호 : 551225-1670916)
Test Facility Management : Il-Je Yu (Personal No. : 551225-1670916)

시 험 의 범 위 : 단회투여독성시험(설치류/비설치류)
유전독성시험(복귀돌연변이시험, 체외염색체이상시험, 체내 소핵시험)
국소독성시험(피부자극시험, 안점막자극시험)
Test Scope : Single Dose Toxicity Test (Rodent/Non-Rodent)
Genetic toxicity (Reverse Mutation Test, Chromosome Aberration Test, Micronucleus Test)
Local toxicity (Skin Irritation Test, Eye Irritation Test)

비임상시험관리기준 제4조에 의하여 비임상시험기관으로 지정하였음을 증명함.

It is hereby certified that the test facility(ies) was(were) inspected by the national compliance monitoring authority regarding compliance with the Principles of Good Laboratory Practice.

issue date 2006 년(yr) 11 월(month) 6 일(date)

식 품 의 약 품 안 전 청

Commissioner, Korea Food and Drug Administration

비임상시험기관지정변경사항

년 월 일	내 용
2007. 07. 05	대표자 변경 변경 전 : 박강훈 2007. 7. 05 변경 후 : 김창로 (주민등록번호 : 620118-1406914) Chang-Ro, Kim
2008. 08. 06	시험항목 추가 (4) 급성독성 독성시험 (설치류 (흡입)) 반복투여 독성시험 (설치류 (경구 투입)) 변이원성시험 (피부감작성) 2008.8.06
2009. 05. 19	운영책임자 변경 변경 전 : 유일재 변경 후 : 송경석 (Kyung-Seuk Song) 2009. 5. 19
2010. 08. 05	상호 변경 : 한국생활환경시험연구원 안전성평가본부 → 한국건설생활환경시험연구원 바이오융합본부 (Bioconvergence technology division, Korea Conformity Laboratories) 2010. 8. 05
2010. 08. 05	대표자 변경 : 김창로 (Chang-ro kim) → 오태식 (Taeshik oh) 2010. 8. 05

Annex 8. Quality assurance statement-Original