IIRT
Institute for Industrial Research & Toxicology
औद्योगिक अनुसंधान एवं विष विज्ञान संस्थान
Registration No. 1303/C/CPCSEA (Ministry of Environment & Forests, Government of India)
License No.: 01/2015 (Food and Drug Administration, UP)
AN ISO 9001 : 2015, ISO 14001 : 2015, ISO 45001 : 2018 Certified Organization
GLP Certified, NABL (ISO/IEC 17025) Accredited

ACUTE DERMAL IRRITATION OF PSAP "POTASSIUM SALT OF ACTIVE PHOSPHORUS" IN NEW ZEALAND WHITE RABBITS

(Guideline: OECD-404 Acute Dermal Irritation)

SPONSORED BY

ISHA AGRO INDIA
OFFICE No. 05, B-101, MALATI COMPLEX, 4/129, IDEAL COLONY, PAUD ROAD, KOTHRUD PUNE- 411038, INDIA

TESTING LABORATORY

INSTITUTE FOR INDUSTRIAL RESEARCH & TOXICOLOGY
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Project No.	:	201817
Report No	:	IIRT/TOX/122
Date	:	22/06/2018

CONTENTS

TEST	**: PSAP "POTASSIUM SALT OF ACTIVE PHOSPHORUS"**
COMPOUND	**: ISHA AGRO INDIA**
SPONSORED	**: ACUTE DERMAL IRRITATION IN NEW ZEALAND WHITE**
BY STUDY	**RABBITS**
PROJECT No.	**: 201817**

GLP COMPLIANCE STATEMENT

I, undersigned hereby declare that **Project No. 201817/ Report No. IIRT/TOX/122** entitled ***Acute Dermal Irritation of PSAP "Potassium Salt of Active Phosphorus" in New Zealand White Rabbits*** was performed in accordance with the standard operating procedures of ***Toxicology Department, Institute for Industrial Research & Toxicology***, as well as the approved study plan.

I hereby attest the authenticity of the study and guarantee that this report represents a true and accurate record of results obtained and shall not be reproduced except in full, without the written approval of the Sponsor.

The study was conducted to meet the requirements of the **OECD Guideline No. 404 Acute Dermal Irritation/corrosion, Section-4: Health Effects (Adopted: 24th April 2002)** in compliance with the principles of Good Laboratory Practices (G.L.P.).

All original raw data including documentation, the draft report, a copy of the final report and the representative test item are archived in the archives at **Toxicology Department, Institute For Industrial Research & Toxicology.** There were no known circumstances that may have affected the quality or integrity of the study.

The sponsor is responsible for necessary evaluations of the test item concerning the chemicals purity, identity, stability and other required data.

The chemical analysis of the test item ***PSAP "Potassium Salt of Active Phosphorus"*** was carried out by the sponsor.

Dr. Pawan Kumar		22/06/2018
Study Director	**Signature**	**Date**

TEST COMPOUND	**: PSAP "POTASSIUM SALT OF ACTIVE PHOSPHORUS"**
SPONSORED BY	**: ISHA AGRO INDIA**
STUDY	**: ACUTE DERMAL IRRITATION IN NEW ZEALAND WHITE RABBITS**
PROJECT No.	**: 201817**

STATEMENT BY TEST FACILITY MANAGEMENT:

Management of the test facility has made available all the resources to the Study Director which was necessary for conduct of the present study in compliance with the principles of GLP.

I, the undersigned, take overall responsibility for the reliability of the work described in the report with compliance of Good laboratory Practice.

N.N. MISHRA

Laboratory In-charge

22/06/2018

Date

QUALITY ASSURANCE REPORT

This Project No. 201817/ Report No. IIRT/TOX/122 entitled ***Acute Dermal Irritation of PSAP "Potassium Salt of Active Phosphorus" in New Zealand White Rabbits*** (OECD Guideline No. 404) was subjected to inspections by the Quality Assurance Unit.

This report has been audited by the Quality Assurance Unit, and is considered to be an accurate account of the data generated and of the procedures followed. In each case, the outcome of QA evaluation is reported to the Study Director and Management on the day of evaluation. Audits of study documentation, and process inspections appropriate to the type and schedule of this study were as follows:

Standard Test Method Compliance Audit	:	28/05/2018
Animal Preparation	:	28/05/2018
Test Material Preparation	:	29/05/2018
Application of test compound	:	29/05/2018
Assessment of Response	:	29/05/2018 to 11/06/2018
Draft Report Audit	:	15/06/2018
Signature Final Report Audit	:	19/06/2018

Evaluation specific to this study

Quality Assurance Officer
(Ms. Shalini Mishra)

QUALITY ASSURANCE OFFICER IIRT QA Ghaziabad

Date: 22/06/2018

STUDY INFORMATION

PROJECT NUMBER : **201817**

REPORT NUMBER : **IIRT/TOX/122**

STUDY TITLE : ***Acute Dermal Irritation of PSAP "Potassium Salt of Active Phosphorus" in New Zealand White Rabbits*** (OECD Guideline No. 404 Acute Dermal Irritation/corrosion, Section- 4: Health Effects (Adopted: 24th April 2002).

SPONSOR : **ISHA AGRO INDIA**
OFFICE NO 05, B-101, MALATI COMPLEX, 4/129, IDEAL COLONY, PAUD ROAD, KOTHRUD PUNE- 411038, INDIA

TESTING LABORATORY : **INSTITUTE FOR INDUSTRIAL RESEARCH & TOXICOLOGY F-209, UPSIDC, MG ROAD, GHAZIABAD**
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STUDY PERSONNEL

Study Director	:	Dr. Pawan Kumar, Ph.D. Toxicology
Study Personnel	:	Ms. Najma Khan, M.Sc. Toxicology
Histopathology & Veterinarian	:	Dr. Naresh Chandra, M. V. Sc. Pathology

SUMMARY

The Acute Dermal Irritation study of the test compound of ***PSAP "Potassium Salt of Active Phosphorus"*** was conducted on New Zealand white rabbit at the Institute for Industrial Research & Toxicology. The dose selection of acute oral toxicity was provide by The Pesticide Manual (thirteenth edition ISBN 19013996 13 4. Page no. 237-239).

The study was conducted according to OECD-404 guideline for testing of chemicals as follows-

INITIAL TEST (USING ONE ANIMAL)

In the initial test one healthy rabbit of body weight 2.08 kg was selected for the study after acclimatization. The test compound in the amount of 0.5 ml was applied at the different sites on the shaven back skin of animal. The hairs of back sides were removed (approximately 6 cm^2) one day earlier before the treatment.

The test substance ***PSAP "Potassium Salt of Active Phosphorus"*** in the amount of 0.5 ml was applied to a small area (approximately 6 cm^2) of skin and covered with a gauze patch, which was held in place with non-irritating tape. The first patch was applied on the shaven dorsal skin of rabbit and removed after three minutes. No serious reaction was observed at the site of application. The second patch was applied on the different shaven back side and removed after one hour. There were no signs of skin reaction observed at this site of application. Finally, a third patch was applied at a different site and was removed after four hour. *No skin reaction* was observed after four hours patch removal. Finally, Scoring of the skin reaction was performed at 1, 2, 48 and 72 hours after removal of the dressing for any irritation and corrosion.

CONFIRMATORY TEST (WITH ADDITIONAL ANIMALS):

Because there was no corrosive effect observed in the initial test, a confirmatory test was done in order to confirm the irritant or negative response of the test substance by using two additional animals.

In the confirmatory test the test compound ***PSAP "Potassium Salt of Active Phosphorus"*** in the amount of 0.5 ml was applied on the shaven back skin of two animals, each with one patch, for an exposure period of four hours.

After four hours the patch was removed and the skin reactions were graded according to Draize's method (Table 1).

The test compound ***PSAP "Potassium Salt of Active Phosphorus"*** when applied to shaven back skin of rabbits in the amount of 0.5 ml produced well define edema and erythema after 24 hrs of test compound application in intact as well as abraded skin in female rabbits after 24 hrs of application.

Finally, results obtained from present investigation concluded that the ***PSAP "Potassium Salt of Active Phosphorus"*** is slightly irritant to skin in New Zealand White rabbit when applied at the dose level of 0.5 ml on the dorsal back shaven area of skin.

The irritation index was calculated for intact and abraded skin is **1.83 and 1.41** respectively.

INTRODUCTION

OBJECTIVES

The study was conducted with the following objectives:

- To evaluate the dermal irritation potential of ***PSAP "Potassium Salt of Active Phosphorus"*** in New Zealand white rabbits.
- To find out ***PSAP "Potassium Salt of Active Phosphorus"*** induced clinical signs in New Zealand white rabbits.
- To calculate the primary skin irritation index of test compound in New Zealand white Rabbits.

REGULATORY REFERENCES

Test Guidelines

The study was conducted in compliance with the modification OECD Guidelines for Testing of Chemicals (No. 404 **Acute Dermal Irritation/Corrosion, Section-4: Health Effects** (Adopted: 24th April 2002).

- The Pesticide Manual (thirteenth edition ISBN 19013996 13 4. Page no. 237-239).

MATERIAL AND METHOD

TEST ARTICLE

Study title	:	Acute Dermal Irritation In New Zealand White Rabbit
Test compound	:	**PSAP "Potassium Salt of Active Phosphorus"**
Batch No.	:	001
Mfg Date	:	Jan. 2018
Exp. Date	:	Dec. 2021
Phosphorus as P_2O_5		40.62%
Potash as K_2O		40.76%

Sponsored by : **ISHA AGRO INDIA**

- The sponsor shall be responsible for the test sample and its characterization.

TEST SYSTEM

1.	Test Species	:	New Zealand white rabbit
2.	Source	:	Institute for Industrial Research & Toxicology
3.	Age	:	10 to 12 weeks
4.	Sex	:	Female
5.	Body weight range	:	2.0 kg ± 200 g
6.	Identification	:	By cage tag and corresponding colour body marking
7.	No. of animals	:	Three

8. Acclimatization : The healthy rabbits selected for study were acclimatized to standard laboratory condition for one week in experimental room under Veterinary examination.

9. Randomization : After acclimatization and Veterinary examination three females were randomly selected.

HUSBANDRY

Environmental conditions : Air conditioned rooms with 10-15 air changes per hour, temperature between 20 ± 3^{0}C, relative humidity 50-60% and illumination cycle set to 12 hours artificial fluorescent light and 12 hours dark.

Accommodation : Animals were housed individually in stainless steel cages provided with stainless steel mesh bottom and facilities for food and water bottle.

Diet : Pelleted feed supplied by Krishna Valley Agrotech LLP, B7/8, first floor, double storey, Ramesh Nagar, New Delhi-110015, India.

Water : Community tap water passed through 'Aqua Guard on line water filter', was kept in glass bottles, *ad libitum*

EXPERIMENTAL PROCEDURE

PREPARATION OF ANIMALS

The animals were prepared 24 hrs prior to application of test product. The furs from the dorsal area of trunk of animals were removed with electric clippers exposing an area measuring approximately 6 cm^2 of body surface area of animal. The care was taken such that abrasion penetrated the Stratum corneum only and not dermis.

APPLICATION OF TEST COMPOUND

The 0.5 ml of test compound was applied on a small area (approximately 6 cm^2) of intact skin site. Each site of application was covered with impervious dressing which was secured in position with adhesive tape. The treated animals were then housed individually and plastic collar was put around their necks in order to prevent access by the animal to the patch and resultant ingestion of the test product. After patch removal, the dressing and unabsorbed test product was removed and the site of application was cleaned with lukewarm water.

OBSERVATIONS

SKIN REACTION:

The site of application was observed for skin reaction if any. The intact skin site of application of each animal was observed for signs of erythema and edema and the responses were scored following Draize's method at 60 min., 24, 48 and 72 hours after application.

CLINICAL SIGNS:

In addition to the observation of irritation, all local toxic effects, such as defatting of the skin, and any systemic adverse effects were fully described and recorded.

Draize Dermal Irritation Scoring System

Erythema and Eschar Formation	Value	Edema Formation	Value
No erythema	0	No edema	0
Very slight erythema (barely perceptible)	1	Very slight edema (barely perceptible)	1
Well-defined erythema	2	Slight edema (edges of area well defined by definite raising)	2
Moderate to severe erythema	3	Moderate edema (raised approximately 1 mm)	3
Severe erythema (beet redness) to slight, eschar formation (injuries in depth)	4	Severe edema (raised more than 1 mm and extending beyond the area of exposure)	4

EVALUATION OF DERMAL SKIN IRRITATION INDEX:

The dermal irritation index was evaluated at 24, 48 and 72 hrs intervals.

Irritation Index	Evaluation
0.00	No irritation
0.01 -1.99	Slightly irritation
2.00 – 5.00	Moderate irritation
5.01- 8.00	Severe irritation

Source: From U.S. EPA (1988)

ARCHIVE

The raw data, sample of the test substance, study report and other material are being retained for two year at Institute for Industrial Research and Toxicology, Ghaziabad on completion of the study.

RESULTS

SKIN REACTION:

The results obtained from present study reveal that ***PSAP "Potassium Salt of Active Phosphorus"*** when applied to shaven back skin of rabbits in the amount of 0.5 ml showed well defined edema and erythema after 24 hrs of test compound application in intact as well as abraded skin in female rabbits after 24 hrs of application. These responses were graded according to Draize's Scoring method (Table 1).

CLINICAL SIGNS:

The test compound ***PSAP "Potassium Salt of Active Phosphorus"*** applied on the shaven back skin of rabbit at the dose level of 0.5 ml did not produce any clinical signs of toxicity throughout the examination period of 14 days.

TEST COMPOUND : **PSAP "POTASSIUM SALT OF ACTIVE PHOSPHORUS"**
SPONSORED BY : **ISHA AGRO INDIA**
STUDY : **ACUTE DERMAL IRRITATION IN NEW ZEALAND WHITE RABBITS**
PROJECT No. : **201817**

TABLE - 1

INDIVIDUAL ANIMAL DERMAL IRRITATION SCORES

Animal no.	Sex	INTACT SKIN											
		3 Min.		4 Hours		24 Hours		48 Hours		72 Hours		14 days	
		Erythema	Oedema	Erythema	Oedema	Erythema	Oedema	Erythema	Oedema	Erythema	Oedema	Erythema	Oedema
201817-01	F	0	0	0	0	2	2	1	1	0	0	0	0
201817-02	F	0	0	0	0	2	2	2	2	0	0	0	0
201817-03	F	0	0	0	0	2	2	2	2	0	0	0	0
Total		0	0	0	0	6	6	5	5	0	0	0	0
Mean		0	0	0	0	**2.0**	**6.0**	**1.66**	**1.66**	0	0	0	0
Grand Total		**7.32**											

Dermal Irritation Index: 7.32/4 = 1.83

TEST COMPOUND : **PSAP "POTASSIUM SALT OF ACTIVE PHOSPHORUS"**
SPONSORED BY : **ISHA AGRO INDIA**
STUDY : **ACUTE DERMAL IRRITATION IN NEW ZEALAND WHITE RABBITS**
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TABLE – 1 (Continued)

INDIVIDUAL ANIMAL DERMAL IRRITATION SCORES

Animal no.	Sex	ABRADED SKIN											
		3 Min.		4 Hours		24 Hours		48 Hours		72 Hours		14 days	
		Erythema	Oedema	Erythema	Oedema	Erythema	Oedema	Erythema	Oedema	Erythema	Oedema	Erythema	Oedema
201817-01	F	0	0	0	0	1	2	1	1	0	0	0	0
201817-02	F	0	0	0	0	1	2	1	2	0	0	0	0
201817-03	F	0	0	0	0	2	1	2	2	0	0	0	0
Total		0	0	0	0	4	5	4	5	0	0	0	0
Mean		0	0	0	0	1.33	1.66	1.33	1.66	0	0	0	0
Grand Total		**5.65**											

Dermal Irritation Index: 5.65/4 = 1.41

TEST COMPOUND : **PSAP "POTASSIUM SALT OF ACTIVE PHOSPHORUS"**
SPONSORED BY STUDY : **ISHA AGRO INDIA**
PROJECT No. : **ACUTE DERMAL IRRITATION IN NEW ZEALAND WHITE RABBITS**
: **201817**

TABLE – 2

CLINICAL

SIGNS

SEX	ANIMAL No.	Time (Min.)	Time (Hours)					Time (Day)
		3	1	4	24	48	72	14
FEMALE	201817-01	N	N	N	N	N	N	N
	201817-02	N	N	N	N	N	N	N
	201817-03	N	N	N	N	N	N	N

N: No Clinical Signs

CONCLUSION

Based on the results obtained from present investigation, it can be concluded that the test compound ***PSAP "Potassium Salt of Active Phosphorus"*** Sponsored By Isha Agro India, Office No 05, B-101, Malati Complex, 4/129, Ideal Colony, Paud Road, Kothrud Pune - 411038, India. When applied to shaven back skin of rabbits in the dose level of 0.5 ml produced well define edema and erythema after 24 hrs of test compound application in intact as well as abraded skin in female rabbits after 24 hrs of application under the test condition (OECD 404).

The irritation index was calculated for intact and abraded skin is **1.83 and 1.41** Respectively.

The result obtained from present study concludes that the **PSAP "Potassium Salt of Active Phosphorus" is slightly irritant** on intact skin as well as abraded skin.

Dr. PAWAN KUMAR
Study Director

INSTITUTE FOR INDUSTRIAL RESEARCH & TOXICOLOGY,

TEST COMPOUND : **PSAP "POTASSIUM SALT OF ACTIVE PHOSPHORUS"**
SPONSORED BY : **ISHA AGRO INDIA**
STUDY : **ACUTE DERMAL IRRITATION IN NEW ZEALAND WHITE RABBITS**
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CERTIFICATE OF ANALYSIS

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AN ISO 9001 : 2015, ISO 14001 : 2015, ISO 45001 : 2018 Certified Organization
GLP Certified, NABL (ISO/IEC 17025) Accredited

CERTIFICATE OF ANALYSIS

NAME AND ADDRESS OF THE MANUFACTURE/SPONSOR	Report No.	IIRT/1819/1370	Date	07-06-2018
M/s. Isha Agro India Office No. 05, Malti Complex, 4/121, Ideal Colony, Poud Road – Pune, Maharashtra, India.	Party Ref.	-	Date	-
	Product Name	Potassium Salt of Active Phosphorus		
"SAMPLE NOT DRAWN BY IIRT"	Trade Name	PSAP		
Mfd. By: As above	Sample code	-	ICS code	CHEM-1370
	Sample Quantity	200gm	Reed. Dt.	04-04-2018
	Mfg. Dt.	Jan-2018	Exp. Dt.	Dec-2021
	Batch No.	001	Pack cond.	Sealed
	Smp. Draw By	-		

RESULT OF ANALYSIS AND PROTOCOLS OF TEST APPLIED

Description: The material in the form of white free flowing powder, free from visible impurities.

S.No.	Parameters	Method	Results	Unit
1.	Phosphorus as P2O5	FCO	40.62	%
2.	Potassium as K2O	FCO	40.76	%

Note: The above performed tests comply and confirm as per specifications.

28-06-2018
Reported by:
Sign/date

28-06-2018
Reviewed by:
Sign/date

28-06-2018
Approved by:
Sign/date

Note: 1) This certificate refers to only to the particular sample submitted for Testing. 2) This certificate not is produce, except in full, without the permission from the Q.M./Director of IIRT. 3) Results reported valid at the time of Testing. 4) Laboratory Standards are traceable to Nation Standard. 5) This report issued based on the Chemical Composition provided by the Sponsor.

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INSTITUTE FOR INDUSTRIAL RESEARCH & TOXICOLOGY,

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IIRT

GLP CERTIFICATION

QSA INTERNATIONAL

Certificate

OF REGISTRATION

This is to certify that

M/s Institute for Industrial Research & Toxicology

Site: F-209, UPSIDC Phase-I, MG Road, Ghaziabad (U.P.)-201010
Office: A-27, Street No-2, Madu Vihar (I.P.Extension) Delhi-110092

has been assessed and found to be conforming the requirements of the

GLP Facility

OECD Principles of Good Laboratory Practice

for the scope of

Pre-Clinical Toxicology, Pharmacology, Analytical Chemistry & Micro Biology

By QSA International, UK

Registration Number	**: QSA-120326**
Initial Certification Date	**: 30 March 2012**
Re-Certification Date	**: 29 March 2018**
Certification Expiry Date	**: 28 March 2021**

Startford Ray

Certification Manager

Quality System Assessment International Limited
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CGA
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Accreditation No. AB-145001