ISSN 2456-3110
Vol 2 · Issue 1
Jan-Feb 2017

Journal of Ayurveda and Integrated Medical Sciences

www.jaims.in

JAIMS

Charaka Publications

Indexed

ISSN: 2456-3110 ORIGINAL ARTICLE Jan-Feb 2017

Study of Antidotal Effect of *Saindhavadi Yoga* in *Jayapala Beeja* poisoning in Albino Mice

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ABSTRACT

Accidental poisoning of *Jayapala* occurs due to ingestion of oil or overdose of medicinal preparations which contains *Jayapala*. It is also used as abortificant, roots may also be locally used for abortion. LD_{50} value of *Jayapala Beeja Churna* was calculated according to OECD guidelines. Drug safety of *Saindhavadi Yoga* was also done to see whether it was toxic or not. Then dose of both drugs were calculated. In vivo study was conducted at authentified animal house. After dosing the animals with suspension of *Jayapala Beeja Churna*, they are observed for symptoms of poison. All necessary precautions were taken during experiment. Observations were tabulated, Data was analysed with the help of descriptive statistics along with Mann-whiteny U test for statistical significance at p value of 0.05 and ANOVA test. Conclusion was drawn based on the analysed data that shows role of *Saindhvadi Yoga* as antidote against *Jayapala Beeja* poisoning. The observations confirmed that, *Saindhvadi Yoga* delays the effect of *Jayapala Beeja* poisoning. It shows, there is a difference in experimental (Group-II) and trial group (Group-III).

Key words: *Jayapala, Croton Tiglium, Saindhvadi Yoga.*

INTRODUCTION

Poison is always fatal but when used properly, it will act as *Rasayana*.[1] *Acharya Sushruta* in *Kalpasthana* 2nd *Adhyaya* classified *Visha* as *Sthavara Visha* and *Jangama Visha*.[2] *Jayapala* in Ayurveda is described as *Sthavara Phala Visha* and *Upavisha*. Seed of *Jayapala* is used in various *Kalpas* such as *Icchabhedi Rasa*.[3]

Jayapala oil can cause burning, redness and vesication when in contact with skin. Vesicles later suppurate and causes scaring. Croton can bring burning pain when ingested in mouth and throat extending to the abdomen, salivation, Nausea, vomiting, purging, severe gripping pain and bloody stools.[4]

Saindhavadi Yoga is described in *Yogaratnakar Vishadhikaranam Adhyaya* used in *Sthavara* and *Jangam Visha*.[5]

There is no specific antidote for *Jayapala Beeja* poisoning, treatment is based only on general principles. Accidental, Homicidal poisoning or overdose of medicinal preparations of *Jayapala Beeja* is seen, so it is necessary to treat patient of *Jayapala Beeja* poisoning with drugs which are easily available and cheap.

Thus here is an effort to study the antidotal effect of Saindhavadi *Yoga* in Albino mice exposed to *Jayapala* Beeja poisoning.

OBJECTIVES

To study antidotal effect of *Saindhavadi Yoga* in *Jayapala Beeja* poisoning in albino mice.

MATERIALS AND METHODS

- Mice will be kept under observations before experiment for acclimatization.

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Submission Date : 13/02/2017 Accepted Date: 22/02/2017

Access this article online

Quick Response Code

Website: www.jaims.in

DOI: 10.21760/jaims.v2i1.7493

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- Lab pelleted diet and water will be given.
- Calculation of fatal dose of *Jayapala Beeja* as per references.
- Dose of *Saindhavadi Yoga* will be calculated.
- Dose will be given according to the body weight of the animal by oral route.

Place of Experiment : NTC, Pune.

Consent of institutional animal ethics Committee was obtained before initiation of the study.

Groups	Details
Group-I (Control Gr.)	Normal animals
Group-II (Experimental Gr.)	*Jayapala Beeja Churna*
Group-III (Trial Gr.)	*Saindhavadi Yoga* given 5 min after *Jayapala Beeja Churna.*

Criteria for Assesment

- Salivation
- Lacrimation
- Urination
- Heart Rate
- R.R.(Righting Reflex)
- Purging

MATERIALS

Raw materials - *Saindhava*, *Maricha* in equal quantity and *Nimba Beeja* in twice quantity mixed with *Madhu* and *Ghrita*. It is used in *Sthavara* and *Jangama Visha*.

Experimental drug

Dravya	**Latin Name**	**Part Used**	**Quantity for preparation**
Jayapala	*Croton tiglium* Linn.	*Beeja*	As per requirement

Antidotal drug

Dravya	**Latin Name**	**Part Used**	**Quantity for preparation**
Saindhava	Sodium Chloride	-	1 part
Maricha	Piper nigrum Linn	Beeja	1 part
Nimba	Azadirecta indica A.juss	Beeja	2 parts
Madhu	Honey	-	1/3 part
Ghrita	Cow ghee	-	2/3 part

METHODOLOGY

The raw materials *Jayapala* and *Saindhvadi Dravya Churna* were taken from GMP certified pharmacy.

Method of preparation: Preparation of *Jayapala Beeja Churna* and *Saindhavadi Yoga* according to SOP for experiment.

- 20g of authentified *Jayapala Churna* sample taken.
- *Saindhava Lavana* (9gm), *Marich Churna* (9gm), *Nimba Beeja Churna* (18gm) were taken and mixed.

Evaluation of therapuetic dose of *Saindhvadi Yoga*

Method

A fresh suspension of *Saindhavadi Yoga* was prepared. Two groups were taken, each group contains 3 female mice. All animals marked for identification. A dose 2000mg/kg was given to albino mice, according to their body weight. Animals were observed for 24 hours and then for 7days.

Result

There were no toxic signs, symptoms and no death occurred in both groups at 2000mg/kg dose.

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Determination of LD_{50} value of *Jayapala* Beeja.

Procedure

- Calculated according to OECD guideline 425.
- A suspension is prepared by dissolving *Jayapala Beeja Churna* in 10ml of corn oil. It was given according to body weight of mice by oral route.
- Two groups of six animals were taken for study. Weight of animals were 20-40g (avg.30g) taken. Overnight fasted animals were fed up by freshly prepared *Jayapala Beeja Churna* suspension.
- Two groups made - normal and experimental.
- In experimental group, initially dose of 1300 mg/kg was given to six animals, among them all animals were alive i.e. 0% mortality.
- Again two groups made. In experimental group, dose of 1500 mg/kg was given and observed for next 24 hours for acute toxicity and mortality. four animals died i.e. 66% mortality.

Result

- At dose of 1300 mg/kg no animals were dead indicating 0% mortality rate.
- At dose of 1500 mg/kg two animals were found dead indicating 66% mortality.
- So dose of *Jayapala* was taken as 1500 mg/kg.

Animal Experiment

Animal species used	Albino- mice
Place of experiment	Research toxicology centre
Strain	Swiss Albino
Source of animal	Research toxicology centre
Sex of animals	50% male and 50% female in each group was taken.
Avg. wt of animals	20 -40gm
No. of animals	6 mice for each group
No. of groups	3
Period of acclimatization	7 days
Period of fasting	Overnight
Feeding	Standard pelleted diet
Water	Community tap water
Temperature	20^0-24^0c
Humidity	40%-60%
Vehicle	*Ghrita* and *Madhu*
Dosing	*Saindhavadi Yoga given orally after 5 min of Jayapala Beeja Churna.*

Animal experiment groups

Groups	**Details**
Group I (Control gr.)	Normal animals
Group II (Experimental gr.)	*Jayapala Beeja Churna* given
Group III (trial gr.)	*Saindhavadi Yoga* given 5 min after *Jayapala Beeja Churna.*

Procedure

1. Male and Female mice were selected.
2. Those were marked for identification.
3. All were weighted with weighing machine
4. Mice of 20-40g were taken for experiment.
5. *Jayapala Beeja Churna* was given orally, in the form of suspension.
6. Dose given according to body weight of animals.
7. After 5 minute *Saindhavadi Yoga* was given orally, in the form of suspension.

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8. All mice were observed for the toxic signs and symptoms.
9. Observed for lacrimation, Heart rate, salivation, urine, diarhoea for 6 hours and then for 24 hours. The heart rate of mice was measured by powerlab data acquisition system (4/25, AD Instrument, Bella Vista, Australia).[7],[8],[9]
10. Observations were noted down for every 15 minute once.
11. All observations of each group were tabulated and compared.

Group-II : Albino Mice with Markings, Body Weight and Dose/kg.

No.	Marking	Body Wt.	Dose of *Jayapala Beeja Churna* 1500mg/Kg.
1	H	24	36
2	B	20	30
3	T	26	39
4	HB	32	48
5	BT	34	51
6	HT	22	33
H- Head, B- Body, T- Tail, HB-Head and Body, BT- Body and Tail, HT- Head and Tail.			

Group III - Albino Mice with Markings, Body Weight and Dose/kg.

No.	Marking	Body Wt.	Dose of *Jayapala Beeja* 1500mg/Kg	Dose of *Saindhvadi Yoga* 1560mg/Kg
1	H	20	30	31.2
2	B	32	48	49.92
3	T	34	51	53.04
4	HB	24	36	37.44
5	BT	26	39	40.56
6	HT	21	31.5	32.76
H- Head, B- Body, T- Tail, HB-Head and Body, BT- Body and Tail, HT- Head and Tail.				

Observations and Results

A period of 6 hours and then for 24 hours and then for 7days observed after the dosing of each animal for the toxic signs and symptoms and mortality.

Observations include changes in salivation, Lacrimation, Urination, respiratory distress, purging and righting reflex.

When animals were found dead, the time of death were recorded as precisely as possible.

Group	Number of Points	Mean	SD	SE of Mean	Median
Group I	6	0.6667	0.5164	0.2108	1.000
Group II	6	0.3333	0.5164	0.2108	0.000
Group III	6	0.000	0.000	0.000	0.000

These observations shows that

Group I (normal group): All mice lived normally without showing any toxic signs and symptoms.

Group II (*Jayapala* group): Four mice out of six mice were died. This was due to *Jayapala* poisoning.

Group III (*Saindhvadi Yoga*): All mice were survived with some toxic signs and symptoms.

Discussion

In *Yogratnakar Vishadhikarana*, *Saindhvadi Yoga* is mentioned as antidote for *Sthavara Visha* poisoning. *Jayapala* is a irritating vegetable poison and *Upavisha*.There is no specific antidotes for *Jayapala Beeja* poisoning only treatment based on general

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principle is given. Accidental, Homicidal poisoning or overdose of medicinal preparations of *Jayapala Beeja* is seen, so it is necessary to treat patient of *Jayapala Beeja* poisoning with drugs which are easily available and cheap.

Accidental poisoning occurs due to ingestion of oil by mistake or overdose of medicinal preparations, and it is also used as abortificant, roots may also be locally used for abortion. There is no any specific antidote on *Jayapala* poisoning.Hence to find out an effective antidote for *Jayapala* poisoning this experiment was carried out.

Saindhavadi *Yoga* was selected for study as it is mentioned in *Yogaratnakara*. Ingredient of *Saindhavadi Yoga* is easily available and cheap. These are widely used as medicine for the treatment of various diseases.

Life span of albino mice is short so we can conduct tests in short time. Acute toxicity study in animals can determine toxicity, time of onset of toxic signs and symptoms and effect of screening drug on them. Sometimes, these studies carried out establish antidotes to a given toxicant.

The mechanisms like homeostatic and pathways found in animals are not found in 'in vitro' study. The neutralisation action of drug on poison other than chemical neutralisation like changes in physical properties cannot be studied by in vitro test. Therefore, screening the drug with effective criteria and the creation of completely clinical scenario of poisoning in living organisms is possible with 'in vivo study'. Because they are small in size, have short life span, Easy to handle, Sensitive to drugs, have a close analogous genetic and physiological match to humans, Inexpensive and can be brought in large quantities. An experiment is carried out at authentified Toxicology Centre.

LD50 of *Jayapala* was calculated according to OECD guideline 425. 0% of mortality found at dose of 1300mg/kg and 66% mortality seen at 1500mg/kg. So we had taken dose as 1500mg/kg for *Jayapala Beeja*.

Dose of *Saindhavadi Yoga* is not mentioned in text, so according to *Sharangdhara Samhita Madhyama Khanda* (6/1), the general dose of *Churna* was mentioned 1 *Karsha Pramana* in human. According to conversion factor for mice the dose of *Saindhavadi Yoga* was calculated i.e., 1560mg/kg. All grades of parameters done with the help of experts of toxicology centre and discussed with them. 0 - 3 grading was given for all parameters. Experimental Group-II (*Jayapala* group): four animals died and two survived within 24 hrs, it is because of *Jayapala* poisoning. Trial Group-III (*Saindhavadi Yoga*): All were survived within 24 hrs, with some toxic signs and symptoms.

CONCLUSION

Conclusion was drawn based on the analysed data that shows role of *Saindhvadi Yoga* as antidote against *Jayapala Beeja* poisoning. The above observations confirmed that, *Saindhvadi Yoga* delays the effect of *Jayapala Beeja* poisoning. It shows, there is a difference in experimental (group II) and trial group (group III).

REFERENCES

1. Bramhanand Tripathi. Charaka Samhita. Sutrasthana 24/60. Chaukhamba Prakashana, Varanasi, 2009;p.47.
2. Ambika Dutta Shastri. Sushruta Samhita. Kalpasthana 2/3, Chaukhamba Prakashana, Varanasi, 2009
3. Sadananda Sharma. Rasatarangini. 11th ed. New Delhi: Motilal Banarsidas Publishers; 1982;p.201/
4. Jaising P. Modi, B.V. Subrahmanyam. Modi's Jurisprudence and Toxicology. 21st edition. 2002;628
5. Vaidya Shri Laxmipati Shastri, Yoga Ratnakar, Caukhamba Prakashana, Varanasi, 2010.
6. B.K. Mahajan, Methods in Bio-Statistics, Jaypee Brothers Medical Publishers, New Delhi, 7th Edition, reprint 2010.
7. MGI — Biology of the Laboratory Mouse". Informatics.jax.org. Retrieved 2010-07-29.
8. Laboratory mice -Wikipedia, the free encyclopedia.

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9. Measuring motor coordination in mice, Robert M.j Deacon, dept. experimental psychology university of oxford, science education.

How to cite this article: Supriya H. Sakhare, Balasaheb D. Gaikwad. Study of Antidotal Effect of Saindhavadi Yoga in Jayapala Beeja poisoning in Albino Mice. J Ayurveda Integr Med Sci 2017;1:92-97.
http://dx.doi.org/10.21760/jaims.v2i1.7493

Source of Support: Nil, **Conflict of Interest:** None declared.

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