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**Research Article**

# TOXICITY STUDY FOR *CELOCIA ARGENTEA* LEAVES

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**ABSTRACT**
*Celocia argentea* L grows as a weed during the rainy season throughout India and is used traditionally for the treatment of jaundice, gonorrhea, wounds and fever. The leaves are used for the treatment of inflammations, fever and itching. Acute toxicity studies of leaves powder of this plant material were carried out as per OECD guideline in Swiss mice weighing 35 to 45 gm by administering a dose 2, 4, 6 and 8gm/kg body weight orally in the form of aqueous slurry. The groups were almost continuously observed for mortality and behavioral changes during first 24 hr and then daily for a fortnight. The observations of changes in body weight, food and water intake as well as cage side observations were reported. There was no abnormality observed in any of these three groups. The whole plant powder was found to be nontoxic.

**KEYWORDS:** *Celocia argentea* L., vehicle, acute toxicity, slurry

## INTRODUCTION

Toxicity is the fundamental science of poisons. The organization for Economic and Development (OECD) mentioned acute toxicity as the advance effect occurring within a short time of oral administration of a simple dose of a substance or a multiple doses given within 24 hours. Phytochemical interactions of poisons lead to injury or death of living tissues. Toxicology is like science and an art like medicine. It includes observational data gathering & data utilization to predict outcome of exposure in human and animals. The ancient humans categorized some plants as harmful and some as safe[1].

All organisms are exposed constantly and unavoidably to foreign chemicals or xenobiotics, which include both manmade chemicals such as drugs industrial chemicals pesticides, pollutants pyrolysis products in cooked foods, alkaloids secondary plant metabolites, and toxins produced by moulds, plants and animals. Poisons are any agent capable of producing a deleterious response in a biological system, seriously injuring function or producing death. Toxicologists usually divide that exposure of animals into four categories which are acute, subacute, subchronic and chronic. The aim of the present work is to study the toxic effect of *Celocia argentea* L. leaves powder[2].

An alcoholic extract of the seeds possesses aphrodisiac, antipyretic, antispasmodic, anticancer, diuretic and antibacterial. Also they are reported to be useful in metrrorhagia, healing of wounds and injuries[3]. In folklore practice, the decoctions of *Celosia argentea* L seeds have been reported to be useful in diabetes mellitus[4].

It is used in the treatment of bloody stool, haemorrhoid bleeding, uterine bleeding, leucorrhoea and diarrhoea. As a parasiticide it is very effective against Trichomonas, a 20% extract can cause the Trichomonas to disappear in 15 minutes[5]. The seed is hypotensive and ophthalmic. It is used in the

treatment of bloodshot eyes, blurring of vision, cataracts and hypertension, but should not be used by people with glaucoma because it dilates the pupils. The seed also has an antibacterial action, inhibiting the growth of Pseudomonas[6].

## MATERIALS AND METHODS

*Celocia argentea* L leaves were collected from Avsari Forest Park (Pune), Mharashtra, India. Herbaria of the plant were authenticated from BSI (Botanical Survey of India), Pune, India. After collection of the required quantity of plant material, it was carefully segregated, cleaned and dried in shade to constant weight. The plant material was kept in preset oven for eight days at 45˚C. The dried plant material free of moisture was powdered and sieved through a BSS Mesh No. 85 sieve and then stored in an airtight container. The study protocol used for the study is given in table No. I

### Animal Maintenance

The animals were housed in polyurethane cages. The cages were provided with rice husk bedding and were cleaned daily. The animals were provided with drinking water ad libitum and were fed on commercially available Mice feed supplied by AMRUT FEED. The specifications of the feed are listed below in table II**.**

The feed was enriched with stabilized vitamins such as Vit. A and $D_3$, Vit. $B_{12}$, Thiamine, Riboflavin, Folic acid and supplemented with all minerals and microelements. Measured quantities of water and feed were supplied daily in each cage. The consumption of water and food was estimated from the amount of water remaining in feeding bottles and from the amount of feed remaining in the feed hopper.

### Cage Side Observations

Assessment of the behavior of animals was carried out by general observations of each animal on a daily basis from the stage of dosing to the end of the study. Any changes or abnormalities recorded could be an indication of toxicity. The test animals at all dose levels showed no significant changes in behavior before and after the administration of an oral dose of whole plant powder as slurry following table III shows the dosage regime. Table IV shows the general cage side observations for the parameters studied. Table V shows the mortality record.

### Body Weight Changes

Body weight is an important factor to monitor the health of an animal. Loss in body weight is frequently the first indicator of the onset of an adverse effect. A dose, which causes 10% or more reduction in the body weight, is considered to be a toxic dose. It is considered to be the dose, which produces minimum toxic effect, irrespective of whether or not it is accompanied by any other changes. All the animals from treated groups did not show any significant decrease in body weights for all the 14 days as compared with the 0 day values. There was no significant change in food and water intake of the test animals at all dose levels for all days.

### Mortality

Mortality is the main criteria in assessing the acute toxicity ($LD_{50}$) of any drug. There was no mortality recorded even at the highest dose level i.e. 8g/K body weight.

## CONCLUSION

From the results of this study, it is observed that there is no change in body weight, food and water consumption by the animals from all dose groups (2 g/Kg body weight to 8g/Kg body weight), There was no mortality recorded even at the highest dose level i.e. 8g/ Kg body weight, which proves that *Celocia argentea* L leaves powder have no any significant toxic effect in mice.

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**Table I: Study Protocol**

| | |
|---|---|
| **Name of the study** | Acute toxicity study |
| **Test material** | *Celocia argentea* L leaves powder as slurry |
| **Animal model** | Albino Swiss Mice |
| **Animals procured from** | Raj Biotech (INDIA) Ltd., Pune |
| **Sex** | Male and Female |
| **Weight range of animals** | Between 35 to 45 g |
| **No. of dose groups** | Four Three groups |
| **Animals per group** | 1 male and 1 female |
| **Route of administration** | Intragastric administration with the help of gavage No. 16 |
| **Dose volume** | 2.0 ml per animal |
| **Vehicle** | Distilled water |
| **No. of administrations** | Single |
| **Concentration of dose** | 2, 4, 6 and 8g/Kg body weight |
| **Study duration** | Acclimatization for 14 days, one day drug administration and 14 days observation period including holidays |
| **Parameters observed** | Cage side observations, daily food and water intake, daily body weight and daily mortality record etc |

**Table II Composition of Feed**

| **Name** | **Percentage** |
|---|---|
| **Crude Protein** | 20 - 21 % minimum. |
| **Ether Extractive** | 04 - 05 % minimum. |
| **Crude Fiber** | 04 % maximum. |
| **Ash** | 08 % maximum. |
| **Calcium** | 1.2%. |
| **Phosphorus** | 0.6 % minimum. |
| **NFE** | 54 %. |
| **ME Kcal/Kg** | 3600. |
| **Pallet Size** | 12 mm. |

**Table III: Doses Regime**

| **Sr. No.** | **Sex** | **Dose g/Kg Body weight** | **No. of animals used** | **Total Vol. administered in cm3** |
|---|---|---|---|---|
| 1 | Male | 2 | 1 | 2 |
| 2 | Female | 2 | 1 | 2 |
| 3 | Male | 4 | 1 | 2 |
| 4 | Female | 4 | 1 | 2 |
| 5 | Male | 6 | 1 | 2 |
| 6 | Female | 6 | 1 | 2 |
| 7 | Male | 8 | 1 | 2 |
| 8 | Female | 8 | 1 | 2 |

**Table IV: Cage Side Observations for All Animals**

| Sr. No. | Parameters | Cage Side Observations |
|---|---|---|
| 1 | Condition of the fur | Normal |
| 2 | Skin | Normal |
| 3 | Subcutaneous swellings | Nil |
| 4 | Abdominal distension | Nil |
| 5 | Eyes –dullness | Nil |
| 6 | Eyes – opacities | Nil |
| 7 | Pupil diameter | Normal |
| 8 | Ptosis | Nil |
| 9 | Colour & consistency of the faeces | Normal |
| 10 | Wetness or soiling of the perineum | Nil |
| 11 | Condition of teeth | Normal |
| 12 | Breathing abnormalities | Nil |
| 13 | Gait | Normal |

**Table V: Mortality Record**

| Group | 2g/Kg | 2 g/Kg | 4 g/Kg | 4 g/Kg | 6 g/Kg | 6 g/Kg | 8 g/Kg | 8 g/Kg |
|---|---|---|---|---|---|---|---|---|
| **Sex** | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** |
| **Hr. 1** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Hr. 2** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Hr. 3** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Hr. 4** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Day 1** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Day 2** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Day 3** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Day 4** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Day 5** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Day 6** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Day 7** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Day 8** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Day 9** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Day 10** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Day 11** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Day 12** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Day 13** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Day 14** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Mortality** | **0/1** | **0/1** | **0/1** | **0/1** | **0/1** | **0/1** | **0/1** | **0/1** |

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