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Acute oral toxicity study of *Coldenia procumbens* Linn whole plant Kashaya in Wistar albino rats

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ABSTRACT

The aim of this study was to investigate the acute toxicity of *Coldenia procumbens* Linn kashaya using Wistar albino rats. Acute toxicity study was performed using OECD guidelines 425,a dose of (175mg/kg, 550mg/kg, or 2000mg/kg) body weight administered orally to rats. In this study daily for 14 days animals were observed for toxic symptoms and mortality. The careful cage side observation was done without disturbing the animal attention and at the end of the every hour the animal were individually exposed to open arena for recording the behavioral changes like increased or decreased motor activity , convulsions, straub's reaction, muscle spasm, catatonia, spasticity, ophisthotonus , hyperesthesia , muscle relaxation, anesthesia, arching and rolling, lacrimation, salivation , diarrhea, writhing , mode of respiration, changes in skin colour etc. exitus, CNS depression- hypo activity, passivity, relaxation, ataxia, narcosis, etc. and recorded in this study. The result of this acute toxicity study neither signs of toxicity nor mortality among the rats were observed of the experimental period. The overall this acute toxicity study indicates that *Coldenia procumbens* whole plant is non-toxic up to a dose of 2000mg/kg body weight, which could be considered a safe dose.

Key words - *Coldenia procumbens* , acute oral toxicity, OECD

INTRODUCTION

India is a veritable gold mine of different types of flora and ethno-medical expertise. The study or comparison of the traditional medical systems used by distinct ethnic groups is known as ethnomedicine[1]. Traditional knowledge includes the experience, teachings, wisdom, and understanding of these groups, and it is frequently passed down orally from one generationto the next[2]. Urbanization and a change in lifestyle caused such information rays to slowlyerode. India, which has a vast bank of knowledge, needs to gather and properly document these details to improve its current pharmacopoeia.[3]

The study of poisons is called toxicity.[4] The organization for economic and development defined acute toxicity as the advance effect occurring within a short period of time following oral route of administration of a single dose of substance or multiple doses given within 24 hours, for the interaction of poisons causes damage to or death of living tissue. Ancient humans classified some herbal medical plants as safe and others as hazardous.

In emerging nations like India, there is a rising need for medicinal herbs. In order toinvestigate possible medications from such plants, consideration must be made to evaluating their therapeutic worth. The flora of India contains many medicinal plants that are extensively scattered throughout the country. *Coldenia procumbens* Linn from boraginace[5] family is such an herb which is not much explored in the field of Ayurveda. Folklore people as well as siddha people using this magical drug for treating different clinical entities like rheumatoid arthritis, wound healing, diabetic and cardiac issues etc.[6] Despite the fact that Ayurveda possesses so many drugs for the treatment of fever, none of them provide completeeffectiveness. . A study named Antipyretic activity of *Coldenia procumbens* whole plant Kashaya in Wistar albino rats showed a very good results. Hence to flourish the practice and popularity of *Coldenia procumbens* the acute oral toxicity study is mandatory.

MATERIALS AND METHODS

Plant Collection and authentication

Matured whole plant of *Coldenia procumbens* Linn. was collected after its flowering and fruiting from its natural habitat such as paddy fields nearer to Jokkatte and Udyavara,Udupi. And it was authenticated by botanist. Plant parts were cleaned from extraneous matter, washed properly in slow tap water before shade drying of root, stem and leaves. After complete air drying the plant material was powdered and used for acute oral toxicity study.

Animals[7]

5 healthy Wistar albino rats of either sex of body weight 150-200 were obtained from animal house attached to SDM research centre , SDM Ayurveda college , Udyavara, Udupi. All the selected animals were kept under acclimatization for 7 days before dosing.

The animal were marked with saturated Picric acid solution in water for proper identification.

Animal number	Marking
1	Head
2	Neck
3	Middle of the back
4	Base of the tail
5	No mark

Rats were housed in each cage of poly propylene with stainless steel top grill. The dryhusk was used as bedding material and was changed every morning. The animal were exposed to 12 hours light and 12 hours dark cycle with the relative humidity 50 to 70 % and the ambient temperature was 22 ± 03®c . Animals were fed with Amruth brand rat pellete supplied by Pranav Agro Ltd Amruth brand rat pellete feed supplied by Pranav Agro Ltd, throughout the study period except on previous night of dosing i.e (overnight) fasting before dosing. The drinking water was given *ad libitum* Propylene bottles with stainless steel sipper tube.

Preparation of test formulation

Test drug : ***Coldenia procumbens* Linn**
Vehicle : Gum acacia

Selection of the dose

The test formulation was made in to fine suspension in vehicle with suitable concentration. All the animal were dosed constant dose volume.(1 ml/ 100g body weight)

Dose

175mg/kg , 550mg/kg, 2000mg/kg

Schedule : single dose per animal

Sl.no	Identification of animals	Desired dose (according toAOT)	Body weight (grams)	Calculated dose (ml)
1	Head	175mg/kg	220	1.13ml
2	Neck	550mg/kg	130	0.7 ml
3	Back	2000mg/kg	175	3.4ml
4	Base of the tail	2000mg/kg	190	3.7ml
5	No mark	2000mg/kg	200	3.92ml

Administration: The test formulation was administered through oral route at different dose levels to respective animal through oral feeding needle on to disposable syringe.

Acute toxicity studies

The acute oral toxicity study was performed as per OECD-425 guidelines. The Limit Testis a sequential test that uses a maximum of 5 animals. A test dose of 2000, or exceptionally 5000

mg/kg, may be used. Signs of toxicity, behavioral changes, CNS depression and mortality of each animal were observed every day for 14 days

CAGE SIDE OBSERVATION

Examination of Physical and Behavioral changes :

The animal was observed continuously for 4 hours after the dosing. The careful cage side observation was done without disturbing the animal attention and at the end of the every hour the animal were individually exposed to open arena for recording the behavioral changes like increased or decreased motor activity , convulsions, straub's reaction, muscle spasm, catatonia, spasticity, ophisthotonus , hyperesthesia , muscle relaxation, anesthesia, arching and rolling, lacrimation, salivation , diarrhea, writhing , mode of respiration, changesin skin colour etc. exitus, CNS depression – hypo activity, passivity, relaxation, ataxia, narcosis, etc.

Mortality:

All the animals were observed at ½, 1, 2, 3, 4, 24 h, 48 h after dosing and there after daily once for mortality during the entire period of the study (i.e.14 days).

RESULT:

Physical and behavioral examination:

There were no physical and behavioural changes (except mild increase in motor activity and irritability seen in animal dosed 550mg/kg and 2000mg/kg) in all the treated animals on day one at ½, 1,2,3,4 hours intervals after dosing and there after once daily for 14 consecutive days. Thus the data obtained from the study on single dose administration of ***Coldenia procumbens*** **Linn** oral administration up to 14 days of observation period does not result in any physical and behavioural changes.

Mortality:

All the animals belonging to the treated group were survived throughout the 14 days observation period after dosing.

CONCLUSION:

The LD50 is greater than 2000 mg/kg.

The test drug did not produce any mortality up to the dose of 2000mg/kg per oral which is equivalent to 22.4g total dose for a human being weighing 70 kg man. At the dose level studied the drug also did not produce any observable toxic effect except mild increase inmotor activity and irritability seen in animal dosed 550mg/kg and 2000mg/kg. Thus it canbe concluded that the test drug is without any toxic potential even at the dose of 2000mg/kgin animal's equivalent to 22.4g for human being.

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