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Research article

Safety study of a Siddha Herbal formulation '*Changan Ilai Kudineer*'

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Abstract

Background

The test drug *Changan Ilai Kudineer* composed of of chief ingredient Azima tetracantha which is referenced from *Gunapadam Mooligai vaguppu*. It has wide clinical role and majorly used to alleviate vatha related disorders. Even though it is from herbal origin, The safety profile has to be evaluated for the wellness of mankind.

Objectives

The objective of this study was to investigate the acute toxicity parameters of Siddha herbal formulation *Changan Ilai Kudineer.*

Method

Acute oral toxicity is carried out as per the OECD-423 guidelines after the animal ethical clearance from Institutional Animal Ethics Committee. In the acute toxicity study female albino Mice administered single oral dose (0, 300, 2000 mg/kg) of *Changan Ilai Kudineer*, and observed the physical symptoms and behavioral changes for the crucial phases of the study.

Results

In the acute toxicity study, no such mortality or behavioural changes were observed in the treated animals with a varied single dose of *Changan Ilai Kudineer* upto 2000 mg/kg.

Conclusion:

These results exhibit the absence of acute oral toxicity after treatment of *Changan Ilai Kudineer* in rats. However, further clinical studies humans are needed in order to have sufficient safety evidence for its use in humans.

Keywords

Changan Ilai Kudineer, Siddha Medicine, Toxicity studies,

Keywords

Introduction

Plant based medicine i.e traditional medicine from time immemorial has been the main stay of health care need for the treatment of various types of diseases. Despite improvement in science and technology in medicine, greater numbers of the population are still relying on herbal medicine to resolve their primary health problems.

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In most developed countries, there appears to be increased awareness of the usefulness of herbal drugs in the management of various disease conditions. According to a World Health Organization estimate, more than 80% of the world's population relies on traditional medicine for their primary healthcare needs.

Herbal medicines have attained the widespread acceptability as natural therapeutic agents for various diseases like diabetes, arthritis, renal and liver diseases, obesity and cardiovascular disorders. In the same way, the drug Changan Ilai Kudineer has also primarily indicating for rheumatoid arthritis and associated vatha diseases. In Siddha It is considered as Vali Azhal Keel Vayu, and the same way the allopathic system decried the features as and under Rheumatoid arthritis.

The chief compositon was Azima tetracantha, It has a wide range of phytochemical constituents have been isolated from A. tetracantha Lam which possesses activities like as stimulant, expectorant, antispasmodic, analgesic, anti-inflammatory, anti-ulcer, anti-diarrhoeal, antimicrobial, hepatoprotective, nephroprotective, hypoglycemic and hyperlipidemic activities.

The Rheumatoid arthritis is a chronic multisystem disease .Although there are a variety of systemic manifestations. The characteristic feature of established RA is persistent inflammatory synovitis, usually involving peripheral joints in a symmetric distribution. The potential of the synovial inflammation to cause cartilage damage and bone erosions and subsequent changes in joint integrity is the hallmark of the disease. The Incidence of this vali azhal keel vayu has risen among the menopausal age group women. The onset is most frequent during the fourth and fifth decades of life, with 80% of all patients developing the disease between the ages of 35 and 50. The incidence of RA is more than six times greater in 60-64 year old women compared to 18-29 year old women. The need for safety evaluation of the Siddha and herbal based drug is essential for the hour.

Determination of acute oral toxicity is usually the initial screening step in the assessment and evaluation of the toxic characteristics of all compounds. The types of toxicity tests which are routinely performed by pharmaceutical manufacturers in the investigation of a new drug involve acute, sub-acute and chronic toxicity. Acute toxicity is involved in estimation of LD_{50} (the dose which has proved to be lethal (causing death) to 50% of the tested group of animals) (Shetty Akhila, *et al.,* 2007).

Acute oral toxicity of changan ilai kudineer is carried out as per the guidelines Organization of Economic Co-operation and Development (OECD) -423 guidelines after the animal ethical clearance from Institutional Animal Ethics Committee.

MATERIALS AND METHODS

The test drug *Changan Ilai Kudineer* are referenced from Gunapadam Mooligai Vagupu (Vegetable section)- a Siddha classical text book, published by Department of Indian medicine and Homeopathy and chiefly indicated for *Vali azhal Keel vayu.*

Source of raw drugs:

The required drug for preparation of *Changan Ilai Kudineer* (Internal) is collected from Papanasam Area, Tirunelveli, Tamilnadu.

Ingredient of the preparation-decoction

Changan ilai - 15 gms (Leafs of changan/ *Azima tetracantha* LAM. Of family Salvadoraceae)

Authentication of raw drug

The herb *Changan Ilai was* authenticated by Medicinal botanist of Govt. Siddha Medical College, Palayamkottai.

Purification and Preparation of the drug

The Leafs are washed and dried in the shade. The drug was purified and the medicine is prepared in the Gunapadam practical hall of Govt. Siddha Medical College, Palayamkottai.

Animal studies

Selection of Animals

Healthy adult Wistar albino rat weighing between 170-200 g were used for the study. The animals were housed in poly propylene cages and were kept in well ventilated with 100% fresh air by air handling unit (AHU).

Laboratory standardization protocols

A 12 light / dark cycle were maintained. Room temperature was maintained between 22 + 2o C and relative humidity 50–65%. They were provided with food (Sai feeds, Bangalore, India) and water *ad libitum*.

Animal Acclimatization Procedure

All the selected animals were acclimatized in a separate cage in the laboratory for 7 days prior to the start of the study.

Acute toxicity study of *Changan Ilai Kudineer*

The albino mice are fasted over night and provided only water, after which the changan ilai kudineer is administered by gastric intubations to the relevant group of animals orally at the dose of 50 $mg.kg^{-1}$ body weight in Tween-80.

The animals are then observed for 14 days and maintained with normal food. A mortality rate of 2 or 3 animals in 14 days is recorded and the dose is said to be toxic dose. But when mortality of one animal is observed, then the same dose is repeated again for confirmation. However, if mortality is not observed, the procedure is repeated for further higher doses such as 300 and 2,000 $mg.kg^{-1}$ body weight.

Crucial Phase toxicity observations

Toxic symptoms are observed for 72 hrs including behavioral changes, locomotion, convulsions and mortality (Shah Ayub, 1997, Bürger, 2005).(2,3). Since no such toxicity changes has observed.

Cage Side Observations

Observations include changes in skin and fur, eyes and mucous membranes, and also respiratory, circulatory, autonomic and central nervous systems, and somatomotor activity and behavior pattern. Special attention is directed for the observation of tremors, convulsions, salivation, diarrhea, lethargy, sleep and coma.

Body Weight, Food and Water Intake

Body weight, food and water intake are recorded at two-day intervals.

Results

Acute toxicity study with *Changan Ilai Kudineer*

The acute toxicity of *Changan Ilai Kudineer* was evaluated using OECD- 423 guidelines. There was no mortality or morbidity observed in animals through the 15-days period following single oral administration at all selected dose levels of the *Changan Ilai Kudineer* (Table-1). The animals did not show any changes in the general appearance during the observation period.

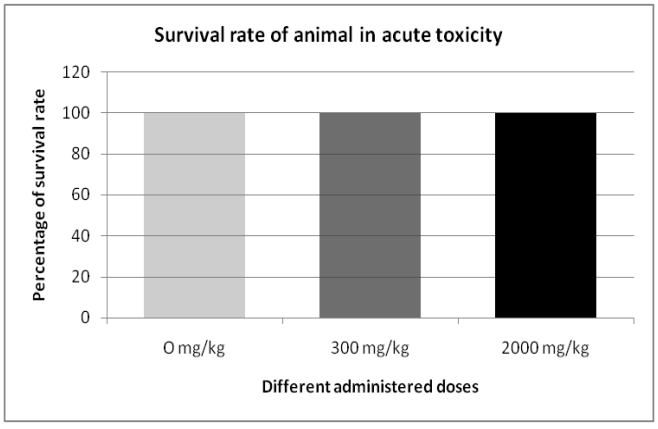
Morphological characteristics such as fur, skin, eyes and nose appeared normal. No tremors, convulsion, salivation, diarrhea, lethargy or unusual behaviors such as self mutilation, walking backward and so forth were observed. Gait and posture, reactivity to handling or sensory stimuli, grip strength was also normal. Overall it is concluded that *Changan Ilai Kudineer* has LD_{50} Upto 2000 mg/kg.

Table.1. Acute toxicity study of changan ilai kudineer on experimental mice.

	Dose ($mg.kg^{-1}$)	Sign of Toxicity ($ST.NB^{-1}$)	Mortality ($D.S^{-1}$)
Group I	0	0/3	0/3
Group II	300	0/3	0/3
Group III	2000	0/3	3/3

where ST- sign of toxicity; NB- normal behaviour; D-died; S- survive. Values are expressed as number of animals (n=3).

Figure 1. Representation of survival rate of animals in acute toxicity study



Discussion

The further evaluation of sub acute and sub-chronic dosing in experimental animals may be more relevant in determining the overall toxicity of the plant *Changan Ilai Kudineer* preparation. The highest overall concordance of toxicity in animals in comparison with humans is with hematological, gastrointestinal, and cardiovascular adverse effects will be noted only through the follow up sub acute studies, wheares no such abnormalities been shown in this acute study and No such gross pathology has been noted and even no such physical abnormalities been noted. As per study plan, OECD-423 guidelines, no mortality was observed in both the animals of control group as well as animals treated with a maximum dose of 2000 $mg.kg^{-1}$

Conflict of Interest

None declared

Source of funding

Nil

REFERENCES

1. Murugesa mudaliar, Gunapadam Mooligai vaguppu, 2st Edition, Published by Department of Indian Medicine and Homeopathy, 2016.
2. Nadkarni, K.M., 1976. Indian Material Medica. Popular Prakashan Pvt. Ltd., Bombay, pp: 1202-1211.
3. Shetty Akhila. J., Shyamjith, Deepa , Alwar, M.C., 2007. Acute toxicity studies and determination of median lethal dose Current science 93,7, 917.
4. Shah Ayub, M.A., Garg, S.K., Garg, K.M., 1997. Subacute toxicity studies on Pendimethalin in rats. Indian J. Pharm. 29: 322-324.
5. Bürger, C., Fischer, D.R., Cordenunzzi, D.A., Batschauer de Borba, A.P., Filho, V.C., Soaresdos Santos, A.R., 2005. Acute and subacute toxicity of the hydroalcoholic extract from Wedelia paludosa (Acmela brasilinsis) (Asteraceae) in mice. J. Pharm. Sci. (www.cspsCanada.org) 8(2):370-373.
6. Bradley DW, Maynard JE, Emery G, Webster H. Transaminase activities in serum of long-term hemodialysis patients. Clin Chem. 1972;18:1442.
7. Wilkinson JH, Boutwell JH, Winsten S. Evaluation of a new system for the kinetic measurement of serum alkaline phosphatase. Clin Chem. 1969;15:487–95.
8. Tietz NW, editor. Text Book of Clinical Chemistry. Philadelphia, PA: W.B. Saunders; 1986. pp. 579–82.
9. Doumas BT, Arends RL, Pinto PC. Standard Methods of Clinical Chemistry. Vol. 7. Chicago: Academic Press; 1972. pp. 175–89.
10. Pearlman FC, Lee RT. Detection and measurement of total bilirubin in serum, with use of surfactants as solubilizing agents. Clin Chem. 1974;20:447–53.
11. Burtis CA, Ashwood ER. Tietz Textbook of Clinical Chemistry. 3rd ed. Philadelphia, PA: W.B. Saunders; 1999. p. 1136.

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