International Journal of Medical Sciences And Clinical Research (ISSN – 2771-2265)
VOLUME 03 ISSUE 11 PAGES: 32-37
SJIF IMPACT FACTOR (2021: 5. 694) (2022: 5. 893) (2023: 6. 184)
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY
Publisher: Oscar Publishing Services

Journal Website: https://theusajournals.com/index.php/ijmscr

Research Article

STUDY OF THE ACUTE TOXICITY OF THE DRY EXTRACT FROM THE SURFACE PART OF LOFANTHUS ANISATUS BENTH GROWN IN LOCAL CONDITIONS IN LABORATORY CONDITIONS

Submission Date: November 08, 2023, **Accepted Date:** November 13, 2023,
Published Date: November 18, 2023
Crossref doi: https://doi.org/10.37547/ijmscr/Volume03Issue11-05

Normurotova Maxfuza Murotboevna
Tashkent Pharmaceutical Institute, Department Of Pharmacology And Clinical Pharmacy, Uzbekistan

ABSTRACT

Lophantus anisatus Benth is a plant that grows in Europe and East Asia. In folk medicine, it is used as an anti-inflammatory and bactericidal agent [1]. Tinctures and decoctions of Lophantus anisatus Benth are used in Tibetan and Mongolian folk medicine as a general tonic, anti-inflammatory, anti-ulcer, and anti-cough agent [2].

Aqueous extracts from the leaves of this plant are prescribed for inflammatory processes in diseases of the gastrointestinal tract, liver and urinary tract. The gel obtained from the leaves of Lophantus anisatus Benth has an antifungal effect [3]. Lophantus anisatus Benth has been found to contain essential oil, flavonoids, tannins, triterpenic acids, organic acids and ascorbic acids [4, 5-9]. Flowers and leaves contain food additives, apple, lemon and ascorbic acid, phenol, flavanoid, alkaloid, vitamin B group.

KEYWORDS

The gastrointestinal tract, liver and urinary tract, triterpenic acids, organic acids and ascorbic acids.

INTRODUCTION

The toxicity of the dry extract obtained from the locally grown Lophantus anisatus Benth plant was studied in healthy animals quarantined for at least 10-14 days. Experiments were conducted on 36 white mice of both sexes weighing 18-22 g, then divided into 6 groups each (5 experimental groups and one intact).

International Journal of Medical Sciences And Clinical Research (ISSN – 2771-2265)
VOLUME 03 ISSUE 11 PAGES: 32-37
SJIF IMPACT FACTOR (2021: 5. 694) (2022: 5. 893) (2023: 6. 184)
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY
Publisher: Oscar Publishing Services

Experimental animals are kept in vivarium conditions in accordance with the requirements specified in the relevant regulatory documents. Appropriate microclimate parameters were maintained in the room where the laboratory mice were kept. Animals were fed complete extruded chow for laboratory animals; Irrigation was carried out from standard drinking bottles with prepared water.

The extract was administered to experimental animals orally, in the form of a suspension, using a metal atraumatic probe, in the following doses: 1000mg/kg (0.1ml\20g), 2000mg/kg (0.2ml/20g), 3000mg/kg (0 .3 ml / 20 g), 4000 mg/kg (0.4 ml/20 g), 5000 mg/kg (0.5 ml/20 g) and 6000 mg/kg (0.6 ml/20 g) was sent.

According to the literature, the maximum volume for a single oral administration is 0.5 ml/20 g and we used the fractional administration method to administer the dose of 6000 mg/kg. A substance of 0.6 ml / 20 g was first injected with 0.1 ml / 20 g, then after 10 minutes 0.5 ml / 20 g.

The animals were then divided into groups and placed in separate cages and monitored continuously for the first hour, then hourly on the first day of the experiment and once a day for the next 13 days (total observation period 14 days).

For 14 days, daily monitoring was carried out for signs of intoxication, such as: general condition and behavior of animals, intensity and nature of motor activity, presence and nature of seizures, coordination of movements, skeletal muscle tone, reaction to stimuli (tactile, sound, light), condition of fur and skin, color of mucous membranes, amount and consistency of feces, food and water consumption, changes in body weight, probability of death. Changes in the body weight of the experimental animals were recorded on the 1st, 3rd, 7th, 9th and 14th days.

Results of an acute toxicity study of the extract. The successful introduction of new drugs into clinical practice presupposes the proven safety of their use. For this purpose, pre-clinical experimental studies are important. When the safety of drugs is evaluated and confirmed by scientific methods, a prerequisite for the use of new drugs created for the first time in humans is to conduct toxicological studies in laboratory animals first. The more thoroughly the toxicity of the drug under investigation is studied in animals (preclinical studies), the fewer adverse reactions may occur during clinical studies [10, 11, 12, 13].

However, preclinical studies traditionally begin with acute toxicity studies, because acute toxicity studies help determine the median lethal dose and determine the safety class of the pharmacological drug being studied, the most importantly, the data obtained regarding death. Helps determine the range of dose selection for studies on specific activities.

International Journal of Medical Sciences And Clinical Research (ISSN – 2771-2265)
VOLUME 03 ISSUE 11 PAGES: 32-37
SJIF IMPACT FACTOR (2021: 5. 694) (2022: 5. 893) (2023: 6. 184)
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY
Publisher: Oscar Publishing Services

Preclinical toxicological studies have been conducted on Lofanthus anisatus Benth extract for enteral use.

The toxicity results of the extract after oral administration are presented in Table 1.

Table 1 - Toxicity results after oral administration of the extract

Dose	results
1000 mg\kg	10 minutes after the administration of the extract, a relative decrease in motor activity was observed in all animals. 20 minutes after the introduction of the drug, the animals experienced a state of drowsiness. 1 hour after the introduction of the extract, the condition of the animals returned to normal, and no death of the animals was observed during the entire period of the experiment.
2000 mg\kg	10 minutes after the administration of the extract, a decrease in motor activity was observed in all animals. A state of dissociation was observed in animals 20 minutes after the introduction of the drug. 30 minutes after the administration of the drug, the animals experienced a state of somnolence. Animals sat in corners. 1 hour after drug administration, all animals fell asleep. After 2 hours, the animals began to wake up, 3 hours after the introduction of the drug, the condition of the animals returned to normal, and no death of animals was observed during the entire period of the experiment.
3000 mg\kg	10 minutes after the administration of the extract, a decrease in motor activity was observed in all animals, hiccups appeared in 2 animals, which stopped 20 minutes after the administration of the drug. The animals sat in the corners of the cage 30 minutes after the injection. 1 hour after drug administration, all animals fell asleep. After 2 hours, the animals began to wake up, 3 hours after the introduction of the drug, the condition of the animals returned to normal, and no death of animals was observed during the entire period of the experiment.

International Journal of Medical Sciences And Clinical Research
(ISSN – 2771-2265)
VOLUME 03 ISSUE 11 PAGES: 32-37
SJIF IMPACT FACTOR (2021: 5. 694) (2022: 5. 893) (2023: 6. 184)
OCLC – 1121105677
Publisher: Oscar Publishing Services

4000 mg\kg	A significant decrease in motor activity was observed in all animals 10 minutes after the administration of the extract; the animals sat in the corner two at a time. Half of the animals developed hiccups, which resolved within a day of drug administration. 40 minutes after the drug was administered, the animals became drowsy. On the 2nd day after the introduction of the drug, the condition of the animals returned to normal, and there was no death of the animals during the entire period of the experiment.
5000 mg\kg	A significant decrease in motor activity was observed in all animals 10 minutes after the administration of the extract. The animals sat in a row along the wall. 1 animal developed hiccups. 40 minutes after the drug was administered, the animals became drowsy. On the 3rd day after the introduction of the drug, the condition of the animals returned to normal, and no death of animals was observed during the entire period of the experiment.
6000 mg\kg	A significant decrease in motor activity was observed in all animals 10 minutes after the administration of the extract. Animals sat separately, alone. 5 animals developed hiccups, which resolved within a day of drug administration. 40 minutes after the drug was administered, the animals became drowsy. 1 hour after drug administration, all animals fell asleep. After 2 hours the animals started to wake up. 5 days after the introduction of the drug, the condition of the animals returned to normal, and no death of the animals was observed during the entire period of the experiment.

Preliminary data on the clinical presentation of intoxication indicate that the main target systems are the central nervous system, which is confirmed by the drowsiness of experimental animals.

According to the classification described in the methodological manual of pre-clinical research of drugs edited by Stefanov A.V.(the classifier has six levels of toxicity classification). According to GOST 12.1.007-76, substances with an average lethal dose of

International Journal of Medical Sciences And Clinical Research (ISSN – 2771-2265)
VOLUME 03 ISSUE 11 PAGES: 32-37
SJIF IMPACT FACTOR (2021: 5. 694) (2022: 5. 893) (2023: 6. 184)
OCLC – 1121105677
Publisher: Oscar Publishing Services

more than 5000 mg / kg, when entered into the stomach, belong to the 4th class of "Low-hazardous substances" (the classifier has four classifications for the safety of substances contains)).

Therefore, we chose a maximum dose of 6000 mg/kg when choosing the maximum dose in the acute toxicity study.

The data obtained on acute toxicity show that the extract is very harmless when administered orally, since the average lethal dose belongs to the fifth toxicity class (practically non-toxic).

According to acute toxicity data, the maximum permissible dose of LD is >6000 mg/kg. Therefore, in future studies, we have followed the interval ≤ LD 0 when determining the therapeutic dose.

Thus, we can conclude that the acute toxicity of the extract after oral administration was studied in white mice. As a result, it was determined that the drug is absolutely harmless, since the average lethal dose belongs to the fifth toxicity class - "Practically non-toxic". It should also be noted that the dose dependence of the drug in the acute toxicity study was determined at six oral dose levels. The obtained data indicate that the study of the acute toxicity of the drug for oral administration has been completed.

CONCLUSION

Acute toxicity data show that the extract is very harmless (practically non-toxic) when administered orally.

According to acute toxicity data, Lethal dose is >6000 mg/kg.

REFERENCES

1. Фурсов Н.В., Фурсов В.Н., Фурсов В.В., Соколова Г.Ф., Великородов А.В., Тырков А.Г., Ионова Л.П. Новое растение для Астрахани и России - лофант анисовый. Астрахань: 2009; 124.
2. Либусь О.К., Работягов В.Д., Кутько С.П., Хлыпенко Л.А. Эфирномасличные и пряноароматические растения. Фито- и ароматерапия. Херсон: 2004; 139–43.
3. Великородов А.В., Ковалев В.Б., Тырков А.Г., Дегтярев О.В. Изучение химического состава и противогрибковой активности эфирного масла Lophantus anisatum Benth. Химия растительного сырья. 2010; 2: 143–6.
4. Чумакова В.В., Попова О.И. Изучение фенольных соединений травы лофанта анисового. Фармация. 2011; 3: 20–2.
5. Воронкова О.С., Писарев Д.И., Новиков О.О. и др. Изучение флавоноидного состава травы лофанта анисового. Научные ведомости БелГУ. Серия: Медицина. Фармация. 2011; 4(99): 186–91.
6. Чумакова В.В., Попова О.И., Дмитриев А.Б.,

International Journal of Medical Sciences And Clinical Research (ISSN – 2771-2265)
VOLUME 03 ISSUE 11 PAGES: 32-37
SJIF IMPACT FACTOR (2021: 5. 694) (2022: 5. 893) (2023: 6. 184)
OCLC – 1121105677
Publisher: Oscar Publishing Services

Мезенова Т.Д. Тритерпеновые кислоты в траве лофанта анисового. Фармация, 2013; 4: 39–44.

6. Tyrkov A., Samotrueva M., Yurtaeva E. The flavonoids of Lophanthus anisatus. XV-th Conference on Heterocycles in Bioorganic Chemistry; 2013 май 27–30; Рига, Латвия: ИХР РАН; 2013: 199.
7. Великородов А.В., Тырков А.Г., Абделаал Х.А.А., Фурсов В.И. Выделение эфирного масла из лофанта анисового и изучение его химического состава. Вестник Алтайского государственного аграрного университета, 2009; 85(10): 66-71.
8. Могилюк В., Добровольный А. Сверхкритическая флюидная экстракция растительного сырья: перспективная технологическая платформа для фармацевтической промышленности. Фармацевтическая отрасль, 2015; 48. [Электронный ресурс]. Режим доступа: http://promoboz.com/ uploads/articles/185.pdf.
9. Игамбердиева П.К. Ибрагимов А.А. Изучение хрома в составе лекарственных растений Ферганской долины и перспективы их использования при лечении больных сахарным диабетом // Universum: Химия и Биология. -2019. - № 1. –С.
10. Асланова Д., Кароматов И.Д. Тысячелистник обыкновенный в народной и научной фитотерапии // Электронный научный журнал «Биология и интегративная медицина». – 2018. – № 1- С. 167 – 186.
11. Шаталова Т.А., Сергеева Е.О., Мичник Л.А., Мичник О.В., Клишина И.И. Изучение фармакологического действия стабилизированных водных извлечений ромашки, тысячелистника,календулы, крушины // The Journal of scientific articles “Health and Education Millennium” -2017. - № 10. –С. 317-320.
12. Хайрзаманова К.А. Аверьянов С.В. Гуляева О.А. Изучение эффективности стоматологической пленки в условиях эксперимента // Juvenis scientia. – 2020. – № 2 -С. 52-60.