Comparative toxicological effects of orally and intraperitoneally administered aqueous extracts of *Abrus precatorius* leaf in *Mus musculus*

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S u m m a r y

Phytochemical analysis revealed the presence of alkaloids, flavonoids, saponins, tannins, reducing sugar, total glycoside and saponin glycosides in high concentration. Proximate analysis revealed the presence of moisture (6.18%), dry matter (93.90%), crude protein (12.06%), crude fibre (15.33%), nitrogen free extract (34.12%), ash (12.28%) and oil (19.21%). Comparative toxicological assessment of orally and intraperitoneally administered aqueous extracts of *Abrus precatorius* leaf was carried out in Swiss albino mice. Median lethal doses (LD_{50}) of orally and intraperitoneally administered aqueous extracts of *Abrus precatorius* leaf were estimated at dose levels of 2558.9 mg/kg and 638 mg/kg body weight, respectively. Intraperitoneal 10 mg/kg body weight of the extract caused increased packed cell volume, neutropenia and decreased aspartate aminotransferase. However, 50 mg/kg oral dose caused increased packed cell volume, neutropenia, decreased alkaline phosphatase and hypochloraemia, whereas oral aqueous dose of 250 mg/kg of body weight caused body weight gain, neutropenia, decreased asparatate aminotransferase and alanineaminotransferase. All the test doses caused lymphocytosis and hypercreatinaemia, hence aqueous extract of *Abrus precatorius* leaf is toxic at dose levels of 10, 50 and 250 mg/kg body weight.

Key words: *comparative toxicity, aqueous extract, Abrus precatorius, Mus musculus*

INTRODUCTION

Abrus precatorius known in English, Hausa, Igbo, Nupe and Yoruba as rosary pea, Idon Zakara, Otoberebere, Eyekosundangiyand Ojuologbo, respectively, belongs to the family papilionaceae [1]. It is a leguminous climber with cylindrical wrinkled stem twinning around trees, shrubs and hedges with glabrous leaves and internodes [2]. Leaves are alternate and par pinnate. The plant has 7–10 pairs of oblong leaflets. Inflorescence consists of flowers in axillary clusters. They are whitish or pinkish in colour. Fruits are small pods with 4–6 ovoid red seeds with a black spot at the base [3]. They are found in tropical climates of Nigeria, India, Thailand, Sri Lanka, the Philippine Islands, South China and West Indies [4].

The *Abrus* seeds are used traditionally to treat diabetes, asthma [5], scratches, sores, wounds caused by cats, dogs and mice. The leaves have antisuppurative properties [6] as they are also used to treat colic, convulsion [7], coughs, sore throat and insomnia [1]. Saganuwan and Gulumbe [8, 9] reported antimicrobial activity of the aqueous extract of the plant against *Salmonella typhimurium*, *Escherichia c*oli, *Klebsiella pneumoniae*, *Streptococcus pyogenes* and *Streptococcus pneumoniae*. Other uses of the plant are in abortion, erectile dysfunction, cancer [10], malaria, anaemia [11], night blindness and ophthalmia [12]. Phytochemical components of the plant are abricin, abrin, abrisin, abrine, abraline, abrasine, abrusgenic acid-methylester, abruslectone, abrussic acid, anthocyanins, ash, campestrol, choline, cycloartenol, delphinidine, gathic acid, glycyrrhizin, hypaphorine, N, n-dimethyl tryptophan-methanocation-methyl-ester, P-coumaroylgalloyl-glucodelpinidin, pectin, pentosans, phosphorus, calcium, picatorine, polygalacturonic acid, precasine, precatorine, protein trigonelline [2, 4, 12, 13], large quantities of oil and proteins [11].

Saganuwan et al. [5] estimated the median lethal dose of aqueous extract of *Abrus precatorius* leaf at a dose level of 2559.5 mg/kg. The aqueous leaf extract of the plant has been reported to cause wide range of toxicity to liver, kidney, heart, spleen, intestine and lung at dose ranges from 12.5 to 200 mg/kg of body weight [14]. Hence the aim of the present study is to examine and compare the toxic effects of orally and intraperitoneally administered aqueous extract of *Abrus precatorius* leaf in *Mus musculus*.

MATERIALS AND METHODS

Collection of the plant materials and extraction

Abrus precatorius leaves used for this study were collected from Basakun area of Bida Town, headquarter of Bida Local Government Area of Niger State, Nigeria and identified by a Botanist in Herbarium of Biological Science Department, Usmanu Danfodiyo University Sokoto, Nigeria where a voucher specimen was deposited. The leaves collected were air-dried to constant weight under an open shade and

pulverized in a mortar using pestle. Fifty (50) grammes of *Abrus* leaf powder was placed in a conical flask and dissolved in 1000 ml of distilled water. The mixture was thoroughly shaken throughout the period of extraction using glass rod stirrer, allowed to stand overnight and filtered with Whatman filter paper no. 1 into measuring cylinder. The filtrate was thereafter concentrated at 60°c in a dessicator and stored in a refrigerator at 4°C until use [14].

Phytochemical analysis of the plant materials

The aqueous extract of *Abrus precatorius* leaf was evaluated for the presence of alkaloids, cardiac glycosides, total glycosides, saponins, tannins, steroids, flavonoids, anthraquinones, reducing sugars, and monosaccharides according to the methods described by Trease and Evans [15].

Preparation of the extract stock solution

Ten [10] grammes of aqueous extract of *Abrus precatorius* leaf obtained from levigation was measured and placed in a beaker and 100 ml of distilled water added to prepare 10% stock solution of the extract that was stored in a refrigerator at 4°C until required for use.

Proximate analysis

Proximate analysis was carried out to determine the percentage amount of carbohydrate, protein, lipid, ash (minerals) and moisture present in the leaf powder of *Abrus precatorius* using the method of Oyeleke [16]; AOAC [17] and McDonald *et al.* [18].

Median lethal dose estimation

Revised Up and Down Procedure was used to estimate the median lethal dose (LD_{50}) of orally administered aqueous extract of *Abrus precatorius* Leaf in *Mus musculus* [19]. Seven mice weighting 26.06±1.33 g of both genders were used for the study. However, the arithmetic method of Reed and Muench [20] was used to estimate the median lethal dose of intraperitoneally administered aqueous extract of *Abrus* leaf. Sixty mice weightinf 26.0±2.5 g of both genders were used for the study Mice feed (Finisher®) was fed to all the experimental mice and water was provided *ad libitum*.

Subchronic toxicity studies

A total of 40 mice weighting 25.0±4.6 g were divided into 4 groups (A, B, C and D), each of ten mice. The method of Yamba et al. [21], was used for selection of dosesused for subchronic toxicity study. Doses ranging between 10th and 100th of estimated LD_{50} were selected. Groups B, and C and D were administered 10, and 50 and 250 mg/kg of body weight of intraperitoneal, and oral aqueous extract of *Abrus precatorius* leaf for a period of 28 days, respectively, but group A was administered water only. Mice feed (Finisher®) produced by Grand Cereals and Oils Limited (GCOL) Jos, Nigeria was fed to all the experimental mice and water was provided *ad libitum*. All animals were handled according to the international guiding principles for biomedical research involving animals [22] as permitted by University of Agriculture Makurdi Ethical Committee concerning the use of laboratory animals given the permit number (P/No: 2010005).

Determination of haematological and biochemical parameters

Half (0.5) millilitre of blood was collected from the intracardiac puncture under the influence of inhalational anaesthetic (ether) [14]. The methods of Baker [23], Tietz [24] and Doumas [25] were used to determine total blood cells count, plasma protein and albumin respectively. Conjugated bilirubin and total bilirubin were determined using the method of Jendrassik and Grof [26]. Aspartate aminotransferase and alanine aminotransferase were determined using the method of Reitman and Frankel [27]. Sodium ion (Na^+) and potassium ion (K^+) were estimated using flame Photometric method (28). Both bicarbonate (HCO_3^-) and Chloride (Cl^-) ions were determined using titration method of Charney and Marbach [29].

Statistical analysis

The data concernig weight gain or loss, as well as haematological and biochemical parameters were expressed as ± SEM. Analysis of variance (ANOVA) was used to analyze all the results. The least significant difference *post hoc* test was used for assessment of the differences between the experimental groups as well as between the control and the experimental groups at a level of 5% [30].

RESULTS

The crude aqueous leaf extract of *Abrus precatorius* was analyzed and a yield of 3.0% [w/w] was obtained. The result of phytochemical screening of the crude

extract is shown in Table 1. The extract contains tannins, saponins, flavonoids, reducing sugars and total glycosides in high concentrations. Cardiac glycosides, steroid and alkaloids were present in moderate concentrations while anthraquinone was absent.

Table 1.

Phytochemistry of the crude water extract of *Abrus precatorius* leaf

Phytochemical constituent	test	inference
Tannins	sodium nitrite	+ + +
Saponins	Froth	+ + +
Cardiac glycoside	Keller-kiliani	+ +
Steroid	Salkowski	+ +
Flavonoids	Litmus	+ + +
Monosaccharides	Barfoed	+
Free anthraquinone	Borntrager's test	–
Combined anthraquinone		–
Reducing sugar	Benedict	+ + +
Alkaloids	Wagner	+ +
	Mayer	+ +
Total glycoside		+ + +
Saponin glycoside		+ + +

+ – low concentration, ++ – moderate concentration, +++ – high concentration, – – not present

The result of proximate analysis of the *Abrus* precatorius leaf powder is shown in Table 2. Proximate analysis revealed moisture (6.10%), dry matter (93.90%), crude protein (12.06%), crude fibre (15.33%), nitrogen free extract (34.12%), ash (12.28%) and oil (19.21%).

Table 2.

Proximate composition (%) of some components of *Abrus precatorius* leaf

Components	quantity (%)
Moisture	6.10
Dry matter	93.90
Crude protein	19.06
Crude fibre	15.33
Nitrogen free extract	34.12
Ash	12.28
Oil	19.21

Median lethal dose of oral aqueous extract of *Abrus precatorius* leaf was estimated using geometric mean of doses administered to seven experimental animals. The geometric mean of n numbers is the product of n numbers of mice used in this experiment, raised to a power of 1/7.

The rough estimate of LD_{50} which is also called dose averaging estimator using Up and Down Procedure is 2558.9 mg/kg body weight of mice (tab. 3). The observed toxicity signs include off-feed, dullness, penile prolapsed, rough hair coat, convulsion and death. The result of median lethal dose estimation using intraperitoneal route of aqueous extract of *Abrus precatorius* leaf is shown below (tab. 4).

Table 3.

Shows the toxicity pattern of oral *Abrus precatorius* leaf extract in *Mus musculus*

S/No.	weight [g]	dose [mg/kg]	survival status	toxicity signs
1	24.6	2559.5	X	off-feed, dullness, death
2	25.5	974.5	O	apparently normal
3	26.4	2559.5	O	dullness, off-feed, survived
4	27.0	4144.5	X	convulsion, penile prolapsed, death
5	24.3	2559.5	O	dullness, rough hair coat, survived
6	28.0	4144.5	X	penile prolaped, death
7	26.6	2559.5	X	dullness, convulsion, death

Table 4.

The toxicity pattern of aqueous extract of intraperitoneal *Abrus precatorius* leaf in *Mus musculus*

Group	dose [mg/kg]	log dose	dead	survived	cumulative deaths	survivals	total	mortality ratio	% of mortality
1	0.00	0	0	10	0	31	31	0/31	0
2	400	2.6020	3	7	3	21	24	3/21	14.3
3	500	2.6989	3	7	6	14	20	6/14	42.8
4	1000	3.0000	4	6	10	7	17	10/17	58.8
5	1250	3.0969	9	1	19	1	20	19/20	95.0
6	2500	3.3979	10	0	29	0	29	29/20	100

The median lethal dose of intraperitineally administered aqueous extract of *Abrus precatorius* leaf was estimated at a dose level of 683 mg/kg body weight (tab. 4). The experimental animals exhibited dullness, rough hair coat, convulsion, off-feed, lying in ventral recumbency and sudden death.

The weight (24.3 ± 4.19 g*) of group D mice administered 250 mg/kg body weight oral aqueous extract of *Abrus precatorius* leaf increased significantly ($p<0.05$) in

comparison with the weight (21.1±2.9 g) of group A. The packed cell volume of group B (40.5±3.1%*) and C (40.3±3.6%*) mice respectively administered 10 mg/kg and 50 mg/kg body weight of the extract increased significantly ($p<0.05$) in comparison with the packed cell volume (33.0±4.1%) of group A mice. The values of lymphocytes for group B (50.8±3.8%*), C (50.0±3.45%*) and D (63.3±3.8%*) increased significantly ($p<0.05$) in comparison with the lymphocytes value of the control mice (47.0±8.11). Although, the neutrophils of group B (44.5±9.0%*), C (45.5±2.6%*) and D (33.8±4.3%*) decreased significantly ($p<0.05$) in comparison with that of the control value (50.2±10.6). The value of eosinophils (2.8±0.5%*) for mice in group B increased significantly ($p<0.05$) when compared to that of the control value (1.4±0.5%). The level of alkaline phosphatase of the mice in group C (115.0±10.3 μmol/l*) decreased significantly ($p<0.05$) as compared to that of the control group (118.4±0.9 μmol/l). The values of aspartate aminotransferase for the mice in group B (11.3±1.5 μmol/l*) and D (7.8±1.5 μmol/l*) decreased significantly ($p<0.05$) in relation to that of the control group (14.4±2.2 μmol/l). Although, the value (5.0±2.0 μmol/l*) of alanine aminotransferase for group D animals relatively decreased significantly ($p<0.05$) in comparison with that of control value (6.4±2.2 μmol/l).The values of creatinine from groups B (87.3±3.0 μmol*), C (89.8±3.9 μmol*) and D (91.3±3.2 μmol*) increased significantly ($p<0.05$) in comparison with that of the control group (83.6±4.5 μmol). The plasma level of chloride ion (94.5±9.7 μmol/l*) of the group C animals decreased significantly ($p<0.05$) as compared to that of the control value (100.8±1.6 μmol/l). All other studied parameters were neither decreased nor increased significantly (tab. 5).

Table 5.

Comparative oral and intraperianeal effects of aqueous extract of *Abrus precatorius* leaf on weight gain haematological and biochemical parameters

Parameters	experimental animals			
	A (control)	B [10 mg/kg I.P.]	C [50 mg/kg oral]	D [250 mg/kg oral]
Weight (g)	21.1±2.9	20.2±2.4	19.2±1.1	24.3±4.1*
Packed cell volume (%)	33.0±4.1	40.5±3.1*	40.3±3.6*	34.8±8.9
Neutrophils (%)	50.2±10.6	44.5±9.0*	45.5±2.6*	33.8±4.3*
Lymphocytes (%)	47.0±8.1	50.8±3.8*	50.0±3.4*	63.3±3.8*
Monocytes (%)	2.4±0.5	2.0±1.4	2.3±0.5	2.0±0.8
Eosinophils (%)	1.4±0.5	2.8±0.5*	1.8±0.5	1.0±0.0
Basophils (%)	0.0±0.0	0.0±0.0	0.0±0.0	0.0±0.0
Total protein [g/l]	70.3±3.4	70.0±4.2	69.7±3.9	69.0±1.4
Albumin [g/l]	35.7±1.6	35.2±0.3	35.3±1.6	36.2±0.7
Total bilirubin [μmol/l]	14.3±0.7	14.2±0.7	14.1±0.7	13.5±0.8
Conjugated bilirubin [μmol/l]	3.1±0.7	2.7±0.2	3.3±0.6	3.1±0.5
Alkaline phosphatise [μmol/l]	118.4±0.9	118.5±0.6	115±10.3*	119.3±0.5

Parameters	experimental animals			
	A (control)	B [10 mg/kg I.P.]	C [50 mg/kg oral]	D [250 mg/kg oral]
Aspartate aminotransferase [μmol/l]	14.4±3.6	11.3±1.5*	14.3±0.6	7.8±1.5*
Alanine aminotransferase [μmol/l]	6.4±2.2	6.8±1.9	7.5±0.6	5.0±2.0*
Urea [μmol/l]	3.4±0.7	3.1±0.4	3.5±0.4	3.1±0.7
Creatinine [μmol/l]	83.6±4.5	87.3±3.0*	89.8±3.9*	91.3±3.2*
Random blood sugar [μmol/l]	4.7±0.4	4.7±0.6	4.5±0.5	4.8±0.4
Potassium ion [μmol/l]	3.5±0.3	3.5±0.1	3.7±0.3	3.7±0.4
Sodium ion [μmol/l]	135.8±1.8	137.2±2.6	137.3±1.9	134.5±1.9
Chloride ion [μmol/l]	100.8±1.6	100.3±33	94.5±9.7*	100.0±3.4
Bicarbonate ion [μmol/l]	24.4±1.1	24.8±1.3	24.5±1.3	25.5±0.6

± SEM of ten observations
* – significantly increased ($p<0.05$) in comparison with control values
* – significantly decreased ($p<0.05$) in comparison with control values

DISCUSSION

The phytochemical screening of *Abrus precatorius* leaf extract showed the presence of useful chemical compounds such as tannins, saponins, flavonoids, and glycosides in high concentrations whereas alkaloids, steroids and cardiac glycosides were present in moderate concentrations (tab. 1). Our findings are in agreement with the report of Abdulrahman *et al*. [31] pointing out that medicinal plants may contain many kinds of chemical components since their biological activities are not usually attributable to a single moiety, and some may occur in high concentrations. Tannins are complex substances that have pronounced physiological astringent properties that hasten the healing of wounds and inflamed mucus membranes and have been used as antidiarrhea, antidysentery, antioxidant, antimutagenic, anticancer, hepatoprotective and psychotic agent. In general, saponins decrease the surface tension and possess emulsifying activities. They tend to alter the permeability of the cell membrane and, therefore, exert a general toxicity on all organized tissues. They have also been known to possess antilipaemic and haemolytic activities and have the ability to decrease cholesterol levels in the blood. Saponins have expectorant action that is extremely useful in the management of inflammation of the upper respiratory tract. Saponins that occur in many plants are cardiotonic in nature [32].

Flavanoids have attracted a great deal of attention in relation to their potential for beneficial effects on health. Several experimental studies have indicated biological and pharmacological properties of many flavonoids including antimicrobial [9] anti-inflammatory, antioxidant and anti-tumour effects, which are associated

with free radical scavenging actions. Glycosides are complex organic substances that hydrolyze to produce sugar (glycone) and non-sugar (aglycone) components. Glycosides are also known to exert pronounced physiological action, even though they may be poisonous to human and animals. Despite of its toxicity, cardiac glycosides are the drugs of choice for the treatment of congestive heart failure. In addition, glycosides with laxative, diuretic and antiseptic properties are used in therapy. Alkaloids are reported to have analgesic, anti-inflammatory and adaptogenic activities which help to alleviate pains, develop resistance against diseases and endurance against stress. Some alkaloids are known to have central nervous system effects varying from excitation to seizures [33]. The 3.0% yield of the extract may suggest high contents of primary metabolites which include carbohydrates, proteins, crude fibre, oil and minerals.

The results of proximate analysis (tab. 2) revealed 6.1% moisture which suggests low moisture content of the dried *Abrus precatorius* leaf powder and therefore low chance of contamination of the powder by microorganism and deterioration following hydrolysis. WHO indicated that medicinal plants material that contain excess water would encourage microbial growth, presence of fungi or insect and deterioration [34]. The 93.9% of dry matter content of the leaf powder signifies very high content of nutritional and antinutritional components of the plant. The 19.06% of crude protein content of *Abrus* leaf may suggest the presence of significant quantity of protein in the plant leaf, despite the fact that crude protein is not a true protein. However, 15.33 and 34.12% of crude fibre and nitrogen free extract in the *Abrus* leaf may be a clear indication of very high content of carbohydrates in the *Abrus* leaf. This agrees with the report of McDonald *et al*. [18] that the main component of the dry matter of all the plants is carbohydrate. This may be because the cell walls of the plants store energy in form of carbohydrates such as starch and fructans. The 19.21% content of ether extract is suggestive of high lipid (essential oils) content of the *Abrus precatorius* leaf. The essential oil contain terpenes, sesquiterpenes and other components that have wide range of therapeutic uses. Some of their applications include the management of infections of the upper respiratory tract, digestive tract, kidney, urinary tract etc. They are also useful in the stimulation of appetite, promotion of digestive, gastric and bile secretions, it also plays important role in the production of medicine and cosmetics [35].

The estimation of median lethal dose (LD_{50}) of both oral and intrapentoneal aqueous extracts of *Abrus precatorius* leaf at dose levels of 2558.9 mg/kg and 683 mg/kg body weight, respectively, is suggestive of toxicity potentials of the plant. Our findings are in agreement with the earlier report of Saganuwan *et al*. [5] indicating that the aqueous leaf extract of the plant is toxic given the oral LD_{50} of 2555.9 mg/kg of body weight. However, the low value of LD_{50} (683mg/kg) for intraperitoneal route is suggestive of increased level of toxicity in comparison with that of the oral route (2558.9 mg/kg). This goes along with the report of Garg [64] who pointed out that the pharmacokinetic disposition of a drug using intraperitoneal route of administration is faster and more effective in comparison with

that of the oral route. The acute toxicity level of the extract using intraperitoneal rout is about tetrafold higher than that of oral route. Subchronic administration of oral 250 mg/kg body weight resulted in increased body weight of group D mice. This agrees with the report of Saganuwan *et al*. [11] indicating that aqueous leaf extract of *Abrus precatorius* increased body weight. The increased level of packed cell volume observed in groups B and C animals given intraperitoneal 10 mg/kg and oral 50mg/kg body weight is in concordance with the report of Saganuwan *et al*. [5] who indicated that the plant has haemopoeitic potential. Hence, aqueous leaf extract of *Abrus precatorius* may be used to improve haematological parameters. The lymphocytosis observed in our study may be of inflammatory origin. Latimer and Tvedten (75) had earlier reported that inflammation can cause lymphocytosis. The neutropenia observed in groups B, C and D may be due to severe inflammation in the body. Latimer and Tvedten [37] reported that the two most probable causes of neutropenia are excessive tissue consumption of neutrophils during severe inflammation and primary bone marrow disease. Although, the observed eosinophilia may be due to eosinophilic inflammation probably in kidney and liver. Thus, intense tissue infiltration with eosinophils may sometimes be unaccompanied by detectable eosinophilia because eosinophils have short half-life in blood. Eosinophills kill parasites, regulate the intensity of hypersensitivity reactions mediated by immunoglobulin (IgE) antibodies, and may promote inflammation and tissue damage [38, 39]. The decreased alkaline phosphatase observed in group C, decreased aspartate aminotransferase in groups B and D as well as decreased alanine aminotransferase observed in group D disagrees with data from the report of Saganuwan and Onyeyili [14] who indicated that *Abrus precatorius* leaf can cause increased level of enzyme markers which may suggest hepatic damage. However, the decreased level of enzyme markers observed in this study may be due to the extract administration. Willard and Tvedten [40] had reported earlier that some therapeutic agents can cause decreased plasma level of enzyme markers. However increased level of creatinine from mice from groups B, C and D is an indication of renal damage. Saganuwan and Onyeyili [14] had earlier reported that *Abrus precatorius* leaf can cause renal damage. Hypochloraemia observed in this study may be due to renal damage or increased quantity of sodium chloride excretion. This disagrees with the report of Saganuwan and Onyeyili [14] indicating that *Abrus precatorius* can cause hyperchloraemia. Since chloride ion was decreased more than the sodium ion, a selective chloride loss could have appeared [41]. Hypochloraemic animals are alkalotic and persistent hypochloraemia is an indication of sodium, potassium and acid-base determination [42].

CONCLUSION

Conclusively, the LD_{50} of both oral and intraperitoneal aqueous extracts were estimated at dose levels of 2558.9 and 683 mg/kg body weight, respectively.

The extracts caused increased packed cell volume, neutropenia, lymphocytosis, eosinophilia, decreased level of enzyme markers (alkaline phosphatase, alanine aminotransferase and aspartate animontransferase), hypercreatinaemia and hyperchloraemia.

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PORÓWNANIE TOKSYCZNOŚCI DOŻOŁĄDKOWEGO ORAZ DOOTRZEWNOWEGO PODAWANIA WODNYCH EKSTRAKTÓW Z LIŚCI MODLIGROSZKA POSPOLITEGO *(ABRUS PRECATORIOUS)* W BADANIACH NA MYSZACH

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S t r e s z c z e n i e

Analiza fitochemiczna wodnego wyciągu z liści *Abrus precatorious* wykazała obecność dużych ilości alkaloidów, saponin, tanin, cukrów redukujących, sumy glikozydów oraz glikozydów saponinowych. W dalszych analizach oznaczono: wilgotność (6,18%), suchą masę (93,90%) oraz zawartość białka (12,06%), włókna (15,33%), ekstraktu wolnego od azotu (34,12%), popiołu (12.28%), oleju (19,21%). Badanie toksyczności ekstraktu wodnego z liści *Abrus precatorious* podawanego dożołądkowo oraz dootrzewnowo przeprowadzono na myszach szczepu Swiss. LD_{50} dla dożołądkowego oraz dootrzewnowego podawania wodnego wyciągu z liści modligroszku pospolitego wynosiła odpowiednio 2558,9 mg/kg oraz 638 mg/kg masy ciała myszy. Dootrzewnowe podanie ekstraktu w ilości 10 mg/kg masy ciała myszy powodowało wzrost łącznej objętości elementów morfotycznych krwi (PCV), neutropenię oraz spadek poziomu aminotransferazy asparaginianowej. W przypadku dożołądkowego podania wyciągu w ilości 50 mg/kg m.c. myszy odnotowano spadek łącznej objętości elementów morfotycznych krwi (PCV), neutropenię, wzrost poziomu fosfatazy alkalicznej oraz hipochloremię. Natomiast dożołądkowa dawka wodnego wyciągu w ilości 250 mg/kg m.c. myszy spowodowała wzrost masy ciała, neutropenię, spadek poziomu aminotrasferazy asparaginianowej oraz alaninoaminotransferazy. Wszystkie badane dawki powodowały limfocytozę oraz hiperkreatynemię i z tego powodu należy uznać, że wodny wyciąg z liści *Abrus precatorious* jest toksyczny w dawkach 10, 50 oraz 250 mg/kg masy ciała myszy.

Słowa kluczowe: *porównanie toksyczności, ekstrakty wodne, modligroszek pospolity (Abrus precatorius), mysz domowa (Mus musculus)*