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EVALUATION OF ANTIDIABETIC ACTIVITY OF LEAVES OF AILANTHUS EXCELSA ON EXPERIMENTAL ANIMALS

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ABSTRACTS

The current study is an effort to examine the effect of Ailanthus excelsa leaves extract on streptozotocin induced diabetes in Wistar rats. Two groups of streptozotocin induced diabetic rats were orally treated through Ailanthus excelsa leaves extract (150 and 300mg/kg) respectively. The blood glucose level, body mass, Glycosylated hemoglobin, liver glycogen, lipid profile, Antioxidant status were measured at the finish of the study that is after 40 days of treatment Ailanthus excelsa leaves extract were originate to be significant ($p < 0.05$) in dropping the blood glucose level, glycosylated hemoglobin, triglyceride, cholesterol, LDL, VLDL, HDL, blood urea, lipid profile, while both the treatments improved body weight, liver glycogen satisfied status once compared to the diabetic control. It have been concluded that Ailanthus excelsa leaves extract, in adding to the antidiabetic activity, too own antihyperlipidemic activities in the streptozotocininduced diabetic model.

INTRODUCTION

Diabetes is a chronic disorder. It may be characterized by hyperglycaemia. These may help in insulin secretion defects and both insulin action. Due to development of insulin resistance the inadequate insulin secretion and tissues dimension may lead to abnormalities of fats, carbohydrate and metabolism of protein. These may lead to change or may increases the concentration of blood glucose level. These may damage many systems of the body like blood vessels, nerves. Diabetes is unique of the most important reasons of morbidity and death in all over the world. According to the survey it was concluded that 0.5 to 3% of person was surfer from these diseases. Now a days its reaches to more than 7 %. Around 200 to 300 million people are affected and it should be double or triple in next few years.[1,2]

It is a heterogenous disorder. These may arise from interactions of genetic and environment and a lifestyle factor. Insufficient insulin production and a genetic factor is causing the type 2 diabetes. It may be resistance to the insulin target tissues. Erectile dysfunction, blindness, poor healing wound, failure of kidney and heart diseases may form during long term diabetes. Type 2 diabetes is more common than type 1. Scientific data of India shows that around 57 to 60 million of patients is been affected in year 2025. This will make the India in world largest diabetic population.[3,4]

Kinds of diabetes

Type 1 diabetes mellitus (T1DM) or Juvenile Onset Diabetes

This is also called as an insulin dependent diabetes mellitus (IDDM). It contains 5 to 10% of population. In this type of insulin defficency immune system of the body may did not see the insulin producing cells in the pancreases as a foreign particle and destroys them. For example, islets of Langerhans, blood glucose. These may produce normal glucose level and may reduce the sugar level. This is known as islet of Langerhans. Blood glucose level is use for normalized the sugar level and destruction of β- cells. This may include the antibiotic cell of islet, insulin to autoantibodies, GAD to antibodies, tyrosine phosphate and IA-2 β.[5,6]

Type 2 diabetes mellitus (T2DM) or Adult-Onset Diabetes

This may know as non-insulin dependent diabetes mellitus. This diabetes may affect 90 to 98% of the population. This may be linked to modern style factor. This was common in adults. This may be decreased the disease condition. This may decline the insulin action. It has heterogeneous disorder by progressive decline and inability of pancreatic beta cells of insulin resistance or dysfunction of beta cells. This disease may be associated with obesity, age older and has a history of diabetes.

Gestational diabetes

This diabetes may be arising in 1 to 2% of pregnant women. This may be arising due to the cause of malfunction of receptor of insulin and placenta hormone.

This may be occurring in trimester stage of pregnancy and it will affect both mother and children. Gestational diabetes may be added the intrauterine risk factor which is may increases the genetic risk of obesity and diabetes. This may arise the permanent evolution in later life.

MATERIALS AND METHODS

Materials

Preparation of the plant material

The plant material is collected from botanical garden of our college. With the help of a botanist, it was identified as *Ailanthus excelsa* the plants material (drug sample). It was identified as *Ailanthus excelsa* Sample is been preserved and documented in the herbarium. A small pieces of plant leaves were washed. Then it will be dried in room temperature. By the use of electric mixer these leaves are converted into the powder form. experiment is carryout to study the effects of ethanolic leaves extract of *Ailanthus excelsa* Around 60g of powder is been weighed and soaked into 600ml of 90% ethanol solution at room temperature. For occasionally shaking this preparation is leave for overnight. Whatman filter paper is use for filtration of extraction. By using Soxhlet evaporation method for the filtration and it should be done until drying and dried to obtained 5g of dried extract.

Glucometer

Glucometer was used to determine of blood glucose levels. This is a Smart Diabetes monitoring system. Blood is taken from the conscious rat tail every week. Glucose was estimated by this device. Glucose in blood is been monitor every week until autopsy. Record was maintained in every week for every group of animals.

Design for Experiment

Two set of experimental models is been performed, in first set of experiment type 1 diabetes is been induced by using STZ and also treated with the use of *Ailanthus excelsa* leaves extract. In second set of experiment high fat feed is use for the induction of type 2 diabetes and it was also treated with same leaves extract of *Ailanthus excelsa*

Experimental protocol for type 1 diabetes

This experiment is done for the investigation and determination of effect of ethanolic leaves extract of *Ailanthus excelsa* on the STZ induced diabetic rats. Animals are weighed around 150 to 190g. Animals are feed by the laboratory food and ad libitum water is been provided thought out the experiment. Animals were grouped into 6 for 6 weeks of age. Each group consist of 10 animals. Group (I) control, Control group with 150 mg / kg / day *Ailanthus excelsa* leaves abstract treatment (II), Group (III) Diabetic control, Group (IV) Diabetic treated with 150 mg / kg / day, Group (V) Diabetic treated with 250 mg/ kg / day *Ailanthus excelsa* leaves extract and Group (VI) diabetic treated with 300 mg/kg/day *Ailanthus excelsa leaves* extract. Animals of groups IV, V and VI were given a single injection of streptozotocin (STZ-50 mg / kg) through citrate buffer (pH 4.5). Animals with Group-I, II and III vaccinated with buffer only. After 72 to 75 hr of injection, blood were taken from the tail of conscious rats and by the use of glucometer glucose were estimated. This process is repeated every week until autopsy. After 10 to 11 days of STZ injection animals of group II and III received 150 mg/kg/day and group VI received 300 mg/kg /day *Ailanthus excelsa leaves* extract which were given orally for minimum 6 weeks. By the using of intubations tube these doses were given daily. Body of each rat is weighed in every group. After completion of 6 weeks animals were ready for autopsy and make the animals fasted overnight. Autopsy is been done by the use of light ether anaesthesia. 5 % EDTA vials is used for the collection of blood which were taken out from superior and inferior vena cava punctures. This is been used for the further experiment (biochemical parameters measurement).

Experimental protocol for type 2 diabetes

Irrespective sexes of animals were weigh which is ranges from 80 to 100g. These animals are separated into five groups for 6 weeks of ages. Each group consist of 10 animals. Group (I) control, Control group with 150 mg/kg/day *Ailanthus excelsa leaves* extract treatment (II), Group (III) Diabetic control, Group (IV) Diabetic treated with 150 mg/kg/day, Group (V) Diabetic treated with 250 mg/kg/day *Ailanthus excelsa leaves* extract. A more fat food is been given to the animals of groups-III, IV and V. animals were use for 100 days in which this may induces the obesity, insulin resistance and shows pre-diabetic state. Group I animals may give normal diets. On 65-day, A single dose of injection of STZ-15 mg/kg is been given to the animal group III, IV and V with citrate buffer (pH 4.5). An oral glucose of 3 g/kg body weight until 75 days. Animal with group-I and II is been vaccinated with buffer alone. Later 72 to 75 hr of injection, blood were taken from the tail of conscious rats and by the use of glucometer glucose were estimated. Diabetes is been formed in the animals with the blood glucose level ranging above 140 mg/dl. On 76^{th} day of animals were treated with normal diet. Group III animals were treated with 150 mg/kg b.w/day and group IV and V animals were treated with 250 mg/kg/day *Ailanthus excelsa leaves* extract from 76^{th} to 98^{th} day. At the time of autopsy animals were fasting and were given light ether anaesthesia. 5 % EDTA vials is used for the collection of blood which were taken out from superior and inferior vena cava punctures. This is been used for the further experiment (biochemical parameters measurement). Estimation of insulin is done on the basis of plasma.

Biochemical parameters measurement

Diabetic state is been judge by blood glucose measurement. By the use of GOD/POD method estimation of autopsy plasma glucose. GOD/POD enzymes in glucose kit is used for chromogen 4-aminoantipyrine and phenol. D-glucomic acid and

hydrogen peroxide is been given by GOD enzyme. Phenol is been oxidised in POD oxidises. It combined with 4- aminoantipyrine which produce red coloured quinoneinne dye. RIA kit is been used for the duplication of plasma insulin level with rat insulin consider as a standard. Glycosylated haemoglobin measurement (HbAlc) was used for the diagnosis of diabetes. Triglyceride were used for the measuring of enzyme-colorimetric method. LDL particles are been modified to form glycated LDL, oxidized LDL and glyco-oxidized LDL. These are more susceptible than native LDL. HDL may protect LDL. It may form the anticoagulant and antiplatelet. By using enzymatic method, Serum cholesterol, HDL-cholesterol were measured. LDL-cholesterol and VLDL-cholesterol is also measured by cholesterol Oxidises peroxides method.

Histological Studies

Rat pancreases were dipped into the Bouin-Hollande sublimate solution around 20 to 24 hours. These were standardized in various fixatives. These are the preservative, fixative test comparisons. Pancreas was embedded by Paraffin at 5 to 6 µ. It was mounted on albumin coated glass slides. Every second slide was used for staining. staining techniques, Chromalum-Hematoxylin and Phloxin (CHP) method shows the best result in between islets and the adjoining exocrine pancreas. These were also use for the differentiated b/w two types of cells within islets of pancreas. In CHP staining method, alcohol is use for the hydration which is been treated with $KMnO_4$ solution. It is been decolourised by sodium bisulphite solution. It will be stained with haematoxylin for 15 minutes. Counter stained in phloxin for few minutes then mordent in phosphotungstic acid, differentiated in 95% alcohol, dehydrated and mounted with DPX. This was observed in the whole pancreases at regular interval of time.

Morphometric analysis

For type-1 and type-2 diabetes, from all group of animal one rat 100 islets were determine as of 100 arbitrarily designated cross sections of the pancreas in experiment from every of the rat and their β cell is also counted. For morphometric analyses each group consist of total 700 to 800 islets are used. Islet of Langerhans dimension was complete on their lengthiest axis at 400 to 600X and size was calculated. This was done by the use of ocular microscope and light microscope.

RESULTS AND DISCUSSIONS

Results of type 1 diabetes experiment

Table 1: Effects of *Ailanthus excelsa leaves* extract on body mass of control and experimental groups of type.

Groups	Normal	Final
Control I	148±7.42	184±13.72
Control + *Ailanthus excels* 150 mg/kg/day II	146±3.92	186±5.06
Diabetic III	151±4.72	160.3±12.9
Diabetic + *Ailanthus excels* 150 mg/kg/day IV	155.9±3.08	166.53±9.5
Diabetic *Ailanthus excels* 250 mg/kg/day V	157.6±3.43	168.55±8.6
Diabetic *Ailanthus excels* 300 mg/kg/day VI	153.49±2.47	169.45±5.48
ANOVA F value (df = 4,35)	0.322 P < 0.05	17.146 P < 0.05

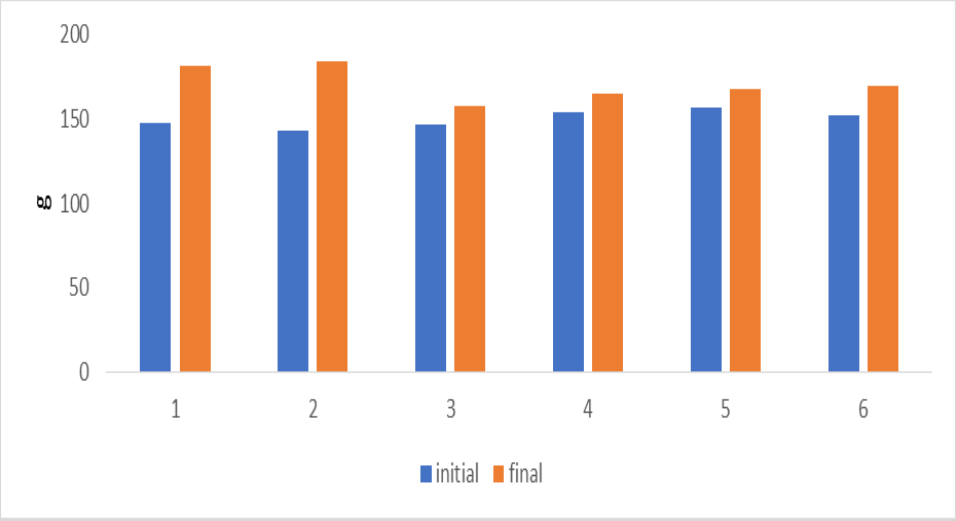

Figure 1: Effects of *Ailanthus excelsa leaves* extract on body mass (g) of control and experimental groups of type-1 diabetic-rats.

Table 2: Effects of Ailanthus excelsa leaves extract on plasma glucose levels (mg / dl) of control and experimental groups of type-1 diabetic-rats.

Groups	0 days	1st day	10th day	20th day	30th day	40th day
Control I	85.4±3.12	79.84±4.57	87±2.45	87±2.47	87±4.5	89±1.9
Control + *Ailanthus excelsa* 150 mg/kg/day II	72.4±4.73	81.45±5.47	75.1±3.15	68.14±3.48	65±4.5	68±2.8
Diabetic III	72.48±6.59	500±15.74	380±45.28	385±21.78	371.45±17.48	387±8.47
Diabetic + *Ailanthus excelsa* 150 mg/kg/day IV	73.4±4.05	380±26.3	298±17.45	288±16.58	185±19.47	135±7.15
Diabetic *Ailanthus excelsa* 250 mg/kg/day V	75.5±4.75	390.47±14.5	328±19.45	219.4±5.48	168±13.47	145±5.4
Diabetic *Ailanthus excelsa* 300 mg/kg/day VI	77.51±5.48	395.14±15.48	339±18.45	220±4.85	166±13.75	99±3.54
ANOVA F value (df = 4,35)	2.47 P < 0.05	115.45 P < 0.05	39.7 P < 0.05	57.15 P < 0.05	138.47 P < 0.05	58.45 P < 0.05

Table 3: Effects of *Ailanthus excelsa* leaves *extract on glycosylated Hb* (HbAlc%) levels of control and experimental groups of type-1 diabetic rats.

Groups	Glycosylated Haemoglobin (%)
Control I	6.19±0.21
Control + *Ailanthus excels* 150 mg/kg/day II	4.87±3.73
Diabetic III	16.20 ± 0.55
Diabetic + *Ailanthus excels* 150 mg/kg/day IV	7.60 ± 0.51
Diabetic *Ailanthus excels* 250 mg/kg/day V	7.30 ± 0.71
Diabetic *Ailanthus excels* 300 mg/kg/day VI	9.30 ± 0.92
ANOVA F value (df = 4,35)	166.49 P < 0.05

Table 4: Effects of Ailanthus excelsa leaves extract on triglyceride levels of control and experimental groups of type-1 diabetic rats.

Groups	triglyceride (mg/dL)
Control I	56 ± 0.91
Control + *Ailanthus excels* 150 mg/kg/day II	54.8 ± 2.14
Diabetic III	86.8 ± 2.7
Diabetic + *Ailanthus excels* 150 mg /kg / day IV	77 ± 1.6
Diabetic *Ailanthus excels* 250 mg / kg /day V	70.47 ± 4.7
Diabetic *Ailanthus excels* 300 mg / kg /day VI	70.92 ± 5.6
ANOVA Fvalue (df = 4,35)	105.49 P < 0.05

Results of type 2 diabetes experiment

Table 5: Effect of Ailanthus excelsa leaves extract on body mass (g) of control and experimentation group of type-2 diabetic.

Groups	0 days	35 days	45 days	60 days	75days	80days	90days	100 days
Control I	89.3±4.48	92.5±4.15	127.5±4.59	159±2.95	210±1.27	219±1.31	219±2.50	241±5.08
Diabetic II	81.9±3.15	110±2.48	155±4.57	211±3.19	336±1.65	320±3.32	306±2.10	289±4.12
Diabetic + *Ailanthus excels* 150mg/kg/dayIII	79.5±3.15	111.5±3.49	158±5.19	259±1.76	334±2.15	314±2.46	319±3.19	299±4.19
Diabetic+ *Ailanthus excelsa* 250mg/kg/day IV	81.7±3.16	123.5±1.65	161±6.02	249±3.49	246±1.29	329±1.26	322±5.16	311±3.56
Diabetic + *Ailanthus excels* 300mg/kg/day V	83.8±3.55	131.9±1.76	168±5.19	251±1.54	231±2.49	330±2.16	330±4.16	316±4.20
ANOVA F value (df= 3, 28)	0.785 P < 0.05	15.79 P < 0.05	19.56 P < 0.05	9.49 P < 0.05	66.49 P < 0.05	49.16 P < 0.05	29.15 P < 0.05	28.15 P < 0.05

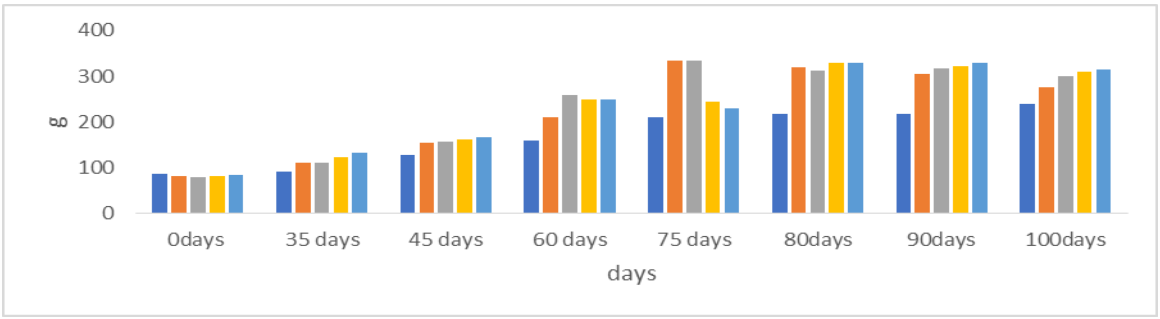

Figure 2: Effects of *Ailanthus excelsa leaves* extract on body mass (g) of control and experimental groups of type2 diabetic rats.

Table 6: Effects of *Ailanthus excelsa leaves* extract on plasma glucose level of control and experimental groups of type2 diabetic rats.

Groups	0 days	35 days	45 days	60 days	75days	80days	90days	100 days
Control I	81.2±2.61	92.5±3.14	83±3.58	85±5.94	88±2.25	83±3.28	82±4.48	86±4.16
Diabetic II	81.8±4.14	90±3.47	125±5.56	219±4.18	248±2.54	235±4.25	240±3.09	249±4.19
Diabetic + A. excelsa150mg /kg/day III	81.4±4.14	88±4.48	148±4.18	235±3.75	250±3.14	149±3.45	119±4.18	115±5.19
Diabetic + A. excels 250mg /kg/day IV	82.6±4.14	89±2.64	110±5.01	215±4.48	245±2.28	119±2.25	118±6.15	119±4.49
Diabetic + A. excels 300mg /kg/day V	83.7±2.54	92±2.75	115±4.18	217±2.52	234±4.48	128±4.15	120±5.15	110±6.19
ANOVA F value (df= 3, 28)	0.245 P < 0.05	0.558 P < 0.05	7.48 P < 0.05	29.48 P < 0.05	45.48 P < 0.05	38.15 P < 0.05	160.14 P < 0.05	35.36 P < 0.05

Table *7:* Effects of *Ailanthus excelsa leaves* extract on glycosylated haemoglobin of control and experimental group of type2.

Groups	Glycosylated Haemoglobin (HbAlc)
Control I	6.07 ± 0.065
Diabetic II	7.45±0.248
Diabetic A. excels 150 mg/kg/day III	8.5 ± 0.276
Diabetic A. excels 250 mg/kg/day IV	8.5 ± 0.256
Diabetic A. excels 300 mg/kg/day V	7.09 ± 0.286
ANOVA F - value (df= 4,35)	49.18 P<0.05

Table *8*. Effects of *Ailanthus excelsa leaves* extract on triglyceride of control and experimental groups of type2 diabetic rats.

Groups	Triglyceride(mg/dL)
Control I	59.16 ± 6.65
Diabetic II	94.7 ± 9.89
Diabetic + A. excels 150 mg / kg / day III	85.4 ± 5.29
Diabetic A. excels 250 mg / kg / day IV	60 ± 5.51
Diabetic A. excels 300 mg / kg / day V	59.7 ± 9.08
ANOVA F value (df = 4,35)	5.19 P < 0.05

Table 9: Effects of *Ailanthus excelsa leaves* extract on cholesterol of control and experimental groups of type2 diabetic rats.

Groups	Cholesterol (mg/dL)
Control I	38.69 ± 3.71
Diabetic II	52.3 ± 2.68
Diabetic + A. excels 150 mg/kg/day III	40.05 ± 1.56
Diabetic A. excels 250 mg/kg/day IV	41.05 ± 1.66
Diabetic A. excels 300 mg/kg/day V	31 ± 8.40
ANOVA F-value (df= 4,35)	20.19 P < 0.05

Table *10*: Effects of *Ailanthus excelsa leaves* extract on LDL of control and experimental groups of type2 diabetic rats.

Groups	Cholesterol (mg/dL)
Control I	16.57 ± 4.18
Diabetic II	19.61 ± 3.93
Diabetic + A. excels 150 mg/kg/day III	18.13 ± 3.12
Diabetic A. excels 250 mg/kg/day IV	19.04 ± 2.42
Diabetic A. excels 300 mg/kg/day V	17.09 ± 4.45
ANOVA F value (df= 4,35)	26.59 P < 0.05

Table 11: Effects of *Ailanthus excelsa leaves* extract on VLDL of control and experimental groups in type2 diabetic rats.

Groups	VLDL (mg/dL)
Control I	16 ±0.99
Diabetic II	20.69 ± 2.99
Diabetic + A. excels 150 mg/kg/day III	19.79 ± 0.80
Diabetic A. excels 250 mg/kg/day IV	16.24 ± 1.32
Diabetic A. excels 300 mg/kg/day V	16.13 ± 2.15
ANOVA F value (df= 4,35)	10.49 P < 0.05

Table 12: Effects of *Ailanthus excelsa leave* extract on HDL of control and experimental groups in type2 diabetic rats.

Groups	HDL (mg/dL)
Control I	30.09 ± 2.47
Diabetic II	17.6 ± 2.16
Diabetic + A. excels 150 mg/kg/day III	27.03 ± 3.06
Diabetic A. excels 250 mg/kg/day IV	23.03 ± 6.07
Diabetic A. excels 300 mg/kg/day V	24.72 ± 6.46
ANOVA F value (df = 4,35)	26.49 P < 0.05

DISCUSSION

Diabetes mellitus is the most common disease now a day. Maximum peoples are suffering from these diseases. In recent era, most of the research are been focus in developing the new strategies to recover and mass of knowledge increasing in adult pancreases plasticity. STZ is used to produces diabetes in experimental animals. Traditional medicine is use for the treatment of diabetic symptoms. These medicine helps to search for new anti-diabetic drugs.

Type 1 diabetes

Body weight

in present study, when STZ is introduces into the animals body with *Ailanthus excelsa leaves* extract at a dose of 150, 250 and 300 mg/kg. the weight of the body is decrease (table 1). After administration of 48 hours the body weight is drop. Extract of *Ailanthus excelsa leaves* has a body gaining weight at latter stage. This extract shows prophylactic effect against STZ which is been neutralized of oxygen free radicals produced by STZ.

Blood glucose

In this present study, when STZ diabetic animals are treated with *Ailanthus excelsa leaves* extract at the dose of 150, 250and 300 mg/kg observed that reduction in plasma glucose (table 2 and figure 4).

Glycosylated haemoglobin (HbAlc%)

In present study, HbAlc is reduced in the STZ induces experimental animals. When STZ induces experimental animals treated with.

A significant reduction of HbAlc in the STZ induced diabetes *Ailanthus excelsa leaves* 150, 250 and 300 mg/kg shows improvements (table 3 and figure 5).

Total cholesterol, LDL, VLDL, HDL and triglyceride

In present study, the lipid profile STZ induced diabetes animals treated with *Ailanthus excelsa leaves* 150, 250 and 300 mg/kg show a tremendous improvement to diabetic control group (table 4,5,6,7,8 and figure 6,7,8,9,10). This indicates that *Ailanthus excelsa leaves* show a better reducing complications in lipid profile in hyperglycaemia and hypertriglyceridemia.

Blood urea

Present study shows that that the blood urea is been reduces when STZ induced diabetic animals treated with *Ailanthus excelsa* 150,250 and 300 mg/kg as compared to diabetic control group (table 9 and figure 11).

Histopathological aspect

Present study shows that the islets diameter and β cells of all the group is been investigated (table 11,12 and figure 13,14). Islets diameters is decreases so the β cells also reduces. Both were restored after treatment by 150,250

and 300mg / kg of *Ailanthus excelsa* excerpt. The weight of the experimental animals was gain but due the treatment with 150, 250and 300mg / kg of *Ailanthus excelsa* abstract may increases the body weight.

Type 2 diabetes

Blood glucose and body weight

In present study investigation proof that a reduction in glucose when STZ induces animals are treated with *Ailanthus excelsa* extract at the dose of 150,250 and 300 mg/kg (table 13 and figure 15). In type 2 this plant extract *Ailanthus excelsa* shows hypoglycaemic action.

Glycosylated haemoglobin (HbAlc%)

In the present study a reduction is shown when STZ induces animals are treated with *Ailanthus excelsa* extract at the dose of 150, 250 and 300 mg/kg (Table 15 and fig 17).

Total cholesterol, LDL, VLDL, HDL and triglyceride

In the present study total lipid is been treated with *Ailanthus excelsa* 150, 250 and 300 mg/kg show improved results as compared to diabetes control group (Table 16,17,18,19,20and Fig 18,19,20,21,22). This shows that the extract of *Ailanthus excelsa* prevent the hyperglycaemia and hypertriglyceridemia in lipid.

Histopathological aspect

Present study shows that the islet diameter decreases in diabetic group animals as well as β-cells are also reducing. Both these are restored after the treatment with 150,250 and 300mg / kg of *Ailanthus excelsa leaves* excerpt (table 23,24 and figure 25,26).

Insulin

Present study shows the increase of plasma insulin when treated with *Ailanthus excelsa leaves* extract at the dose of 150,250 and 300mg / kg compared to diabetic group. This increases the insulin concentration (table 25 and figure 27).

CONCLUSION

The main goal of the current study is to develop an animal model for traditional medicine (*Ailanthus excelsa leaves)* in anti-diabetic activity. Animals become obese by high fat fed and the blood glucose level reached 129 mg/dl. Animal model may cause obesity and causes stress this may result into hyperglycaemia. The current task was to evaluate the healing efficiency *Ailanthus excelsa leaves* on type 1 and type 2 diabetes that made the Wistar rat model. Variety investigated biochemical parameters include blood glucose, triglyceride, cholesterol, LDL, VLDL, HDL, glycosylated Hb percent (HbAlc%) and blood urea. Besides HDL, blood glucose levels, triglyceride, cholesterol, LDL, VLDL, glycosylated the percentage of hemoglobin and blood urea increased in the diabetic group. After treatment and *Ailanthus excelsa leaves* with 150,250 and 300 mg / kg / day in the diabetic group. While the HDL level dropped in the diabetic group and the HDL level was restored to that of the *Ailanthus excelsa* account control group. Studies on the Langerhans Islands recommend that the shrub release treatment in the diabetic group (150,250 and 300 mg / kg / day) type 1 and type mice in diabetes which has resulted in the detection of damaged islands and the restoration of cell no., which is why insulin secretion has been improved. Plant extraction of *Ailanthus excelsa* enhances injured Langerhans islands and increases insulin secretion of β cells.

Type 1 and type 2 sugar. Thus, the abstraction of *Ailanthus excels* tree is treatable effective in reducing type 1 and type 2 diabetes. While *Ailanthus excelsa* left the extract has a healing capacity, a real computer that will slow down Diabetes is still under examination.

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