

CV-NO. 20

Journal of Medical Laboratory Science

Vol. 17, No. 1

August 2004

Comparative Effectiveness of Clonazepam, Ethosuximide, Phenytoin, Carbamazepine and Lamotrigine in Absent Seizure Treatment in Children, Post-Operative Epilepsy

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Investigation of the Effect of Aqueous Mistletoe Leaf Extract on Glucose and Cholesterol Levels in Alloxan-Induced Diabetic Rabbits.

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ABSTRACT

Aqueous leaf extract of the mistletoe was investigated for hypoglycaemic and hypocholesterolaemic effect in diabetic rabbits. Diabetes mellitus was induced in rabbits in groups I-II by a single intraperitoneal injection of alloxan monohydrate at 100mg/kg body weight. Following confirmation of hyperglycaemia, groups I and II were treated with the extract at 1.32 and 2.64g/kg body weight for three consecutive days. After the last treatment, rabbits were fasted for 12 hours and bled at 0, 2, 6 and 24 hours. Serum glucose levels were determined by the glucose oxidase method and cholesterol levels by Liebermann-Buchard method. The results showed statistically significant decreases ($P < 0.05$) in glucose levels at 0 and 2 hours, though there was an increase at 6 and 24 hours. Cholesterol levels decreased at 0, 2, 6 and 24 hours, but not significantly ($P > 0.05$), when compared to control group III. Aqueous leaf extract of the mistletoe (an epiphyte of lemon trees) may be recommended for frequent consumption in the management of insulin-dependent diabetes.

Keywords: Mistletoe Extract, Glucose, Alloxan-Induced Diabetic Rabbits.

INTRODUCTION

Diabetes mellitus is one of the most common non-communicable diseases world wide (1). It predisposes to bacterial infections, and when such infections occur, it may be more serious than in non-diabetic subjects (2). There is also a high prevalence of hypertension in diabetic populations (of the order of 10-55% in Africa) and the relative high prevalence of glucose intolerance in hypertension, gives credence to Reaven syndrome, which shows the link between the emergence of hypertension and diabetes mellitus in most urban populations in the world (3).

Due to the dreaded complications associated with diabetes mellitus, which in turn increases the rate of morbidity and mortality, scientists all over the world have been making efforts to find a remedy to this disease. The practice of administering insulin in order to sustain the life of diabetics, is now obsolete and ineffective due to the high cost of insulin (4).

The treatment of diabetes mellitus requires modification in developing countries, where diagnostic, monitoring tools, insulin supply and other ways for the management of diabetes mellitus are often not available, expensive or toxic. Since diabetics need special and continuous monitoring, patients, mainly Africans often resort to herbal remedies, even while attending orthodox medical clinics (5).

The use of herbs in the treatment of various diseases is common in developing countries. The African mistletoe (*Loranthus bengwensis*) which parasitizes lemon trees is one of such plants which are widely used as antidiabetic agents. Mistletoe is reported to have a number of medicinal properties, including diuretic and anticancer effects, the ability to reduce blood pressure, slow the heart rate and stimulate the immune system (6).

Traditional healers claim that the consumption of aqueous extract of mistletoe leaf

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is a remedy for hyperglycaemia (7). Furthermore, Kafaru (8), also suggested that daily consumption of mistletoe infusion can serve as a prophylactic measure for diabetes mellitus and hypertension. The present study was undertaken to evaluate the effect of aqueous extract of mistletoe on cholesterol and glucose levels of alloxan-induced diabetic rabbits.

MATERIALS AND METHODS

Collection of plant materials.

Fresh leaves of mistletoe (*Loranthus bengwensis*), were collected from Vom village, Jos South LGA, Plateau State and identified at the College of Forestry, Jos. The leaves were air-dried at room temperature (25°C) and pulverized to fine powder using mortar and pestle.

Experimental animals

Cross-bred rabbits weighing between 1.9- 2.5kg were purchased from Dagwom Farm, National Veterinary Research Institute (NVRI) Vom, Plateau State. They were kept in cages and maintained on grower's feed (Vital Feeds, Nigeria PLC), cabbage, carrot leaves and water *ad libitum*

Administration of the extract

Twelve normoglycaemic rabbits were randomly divided into four groups (I, II, III and IV) of three rabbits each. Diabetes was induced in groups I-III animals by a single intraperitoneal injection of alloxan monohydrate at 100mg/kg body weight. With the establishment of hyperglycaemia, groups I and II rabbits were orally treated for 3 consecutive days with aqueous mistletoe extract at 1.32 and 2.64g/kg body weight respectively. Groups III and IV animals served as untreated diabetic and non-diabetic controls respectively.

Serum collection

All the animals were fasted for 12 hours after treatment, and bled by the marginal ear vein puncture into clean centrifuge tubes at 0, 2, 6 and 24 hours. The blood samples were kept

for 1 hour at room temperature to allow for clotting and then centrifuged at 3000rpm for 10 minutes. The serum samples obtained were transferred into clean containers for analysis.

Biochemical Assay

Serum glucose concentration was estimated by the glucose oxidase method of Trinder (9). Briefly, glucose oxidase enzyme catalyzes the oxidation of glucose to gluconic acid and hydrogen peroxide. In the presence of peroxidase enzyme, oxygen from the peroxide is transferred to a suitable oxygen acceptor (Chromogen-4-aminophenazone). This results in the formation of a pink-coloured product which is measured colorimetrically at 510nm. Serum cholesterol concentration was determined by the Liebermann-Burchard reaction (10). Here, cholesterol reacts with acetic anhydride and concentrated sulphuric acid to give a green colour which is measured colorimetrically at 570nm. The results obtained from the glucose and cholesterol tests, were analysed using the student's t-test.

RESULTS

The resultant effects of mistletoe leaf extract on glucose levels in the blood of alloxan-induced diabetic rabbits are presented as Table 1. The results obtained show statistically significant decreases in glucose levels ($P < 0.05$) at 0 and 2 hours, in groups I and II rabbits when compared to values from untreated controls (III), at 0 and 2 hours post-treatment intervals. However, at 6 and 24 hours, the pattern changed as these values rose towards similar values for the control; however, these changes were not significantly different ($P > 0.05$). The effects of extract on cholesterol level in rabbits are shown in Table 2. The results also indicate a decrease in cholesterol levels in treated diabetic rabbits (groups I and II) at all time intervals although the decreases were not statistically significant ($P > 0.05$) at any of the dose levels used.

Table 1: Effects of mistletoe aqueous leaf extract on serum glucose levels in alloxan-induced diabetic rabbits.

Groups	Glucose Values (mmol/L) at elapsed time (h) of:			
	0	2	6	24
I	55.7±5.7 ^a	66.0±3.9 ^a	74.1±3.6 ^a	80.6±1.7 ^a
II	48.6±3.8 ^a	58.1±8.9 ^a	58.1±8.9 ^a	75.9±4.9 ^a
III*	71.8±7.4 ^b	74.6±2.5 ^b	62.9±7.3 ^a	75.4±3.3 ^a
IV	64.4±1.6	58.6±5.1	59.8±4.9	68.4±4.0

Table 2: Effects of mistletoe aqueous leaf extract on cholesterol levels in alloxan-induced diabetic rabbits.

Groups	Cholesterol Values (mmol/L) at elapsed time (h) of:			
	0	2	6	24
I	18.9±1.9	18.1±1.6	12.3±0.8	14.9±2.9
II	15.2±2.9	16.0±1.3	16.8±1.9	15.0±1.8
III*	19.7±1.6	19.6±1.5	16.9±2.8	17.8±1.2
IV	13.1±1.8	14.3±1.5	13.3±0.3	13.0±0.5

DISCUSSION

The efficacy of mistletoe extract to control glucose levels in diabetics appears to be partly confirmed by this study in diabetic rabbits. This was reflected in the results of glucose values obtained at 0 and 2 hours. The effect was greater in group II rabbits, (Table 1). This could be due to the higher dosage used for the group. The result of the effect of the plant on cholesterol levels showed a pattern similar to that of glucose, although not significantly different. The hypoglycaemic effect of mistletoe though transient, could be attributed to the presence of some phytochemicals like alkaloids, flavonoids triterpenoids, glycosides and saponins which are known to be present in plants with known hypoglycaemic effect (8). Alloxan monohydrate is known to destroy the B-pancreatic cells and this consequently hinders insulin secretion. Thus, the possible mode of action of this plant could

not have been the enhancement of insulin secretion, but presumably by a rather indirect pathway.

Traditionally, frequent consumption of aqueous mistletoe extract at 1.32g/kg body weight instead of water, has been recommended for prophylactic treatment of diabetes (8). Diabetes mellitus is the most common endocrine disease encountered in Nigeria with the prevalence increasing rapidly (11). In Western countries, diabetes is the leading cause of chronic renal disease (12). The commonest precludes to chronic renal disease in Nigeria include glomerulonephritis, hypertension, diabetes and obstructive uropathy (13).

The cost of insulin for the treatment of diabetes varies greatly between countries. This is a critical problem, particularly in developing countries where the full, unsubsidized cost is high

and must be borne by the user, or their family over many years or decades. Inability to afford insulin is a major cause of morbidity and mortality in people with diabetes in such countries (14). The results from this study suggest that the aqueous leaf extract of mistletoe has a transient hypoglycaemic and hypocholesterolaemic effect and could therefore be recommended in the management of diabetes mellitus. However, studies in larger groups of experimental animals will be necessary to validate these initial observations. In addition, further work is recommended on non-insulin dependent diabetes mellitus (NIDDM), in order to ascertain the precise mechanism of action of mistletoe leaf extract.

REFERENCES

1. Carl, A. Ashwood, R. (2001): Diabetes Mellitus. Tietz Fundamentals of Clinical Chemistry. pg. 435.
2. Gill, G.V. Staaway SERS (2001): Protein glycosylation in diabetes mellitus, Biochemical and Clinical considerations, *Diabet. Intern.* 11:3 pg 73.
3. Wokoma, F.S. (2002): Diabetes and hypertension in Africa. *Diabet. Intern.* 12: 36.
4. Yudkin, S.J. (2002): Insulin for the world's poorest countries. *Diabet. Intern.* 12: 60.
5. Ohaeri, O.C. (2002): Effects of *sacoglottis gabonensis* stem bark extract on experimental diabetic rats. *Diabet Intern* 12: 76.
6. Spiller, H.A. Williams, D.B. Gorman, S.E. and Stanfletban, J. (1996): Retrospective Study of mistletoe ingestion. *J. Toxicol. Clin. Toxicol.* 34: 405 - 408.
7. Dalziel, J.M. (1955). The useful plants of West Tropical Africa. Crown Agents for Overseas Government and Administration, London, U.K. pg 297.
8. Kafaru, E. (1994): Immense Help from Nature's Workshop. Elikas Health Service Ltd, Nigeria 11-40.
9. Trinder, P. (1969): Determination of blood glucose using 4-aminophenzone as Oxygen Acceptor. *J. Clin. Path.* 22:246-248.
10. Liebermann, L.L. (1958): A method for the estimation of serum cholesterol, *Clin. Chem.* 2:26-30.
11. Famuyiwa, O.O. (1993): Important consideration in the care of diabetic patients in Nigeria, *Int. Diab. Dig.* 4:48-51.
12. Bojesting, M. Arnqvist, H. Hermansson, G. Kailbery, B.E. and Ludvigson, J. (1994): Declining incidence of nephropathy in IDDM. *N. Eng. J. Med.* 330:15 - 18.
13. Akinsola, W. Odesanmi, W.O. Ogunniyi, J.O. and Ladipo, G.O.A. (1989): Diseases causing chronic renal failure in Nigerians - A prospective study of 100 cases. *Afr. J. Med. Sci.* 18:131-135.
14. Thomas, M.P. (1998): Diabetes (Recent Advances). *Brit. Med. J.* 3116:1221 - 1225.