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PROCEEDINGS

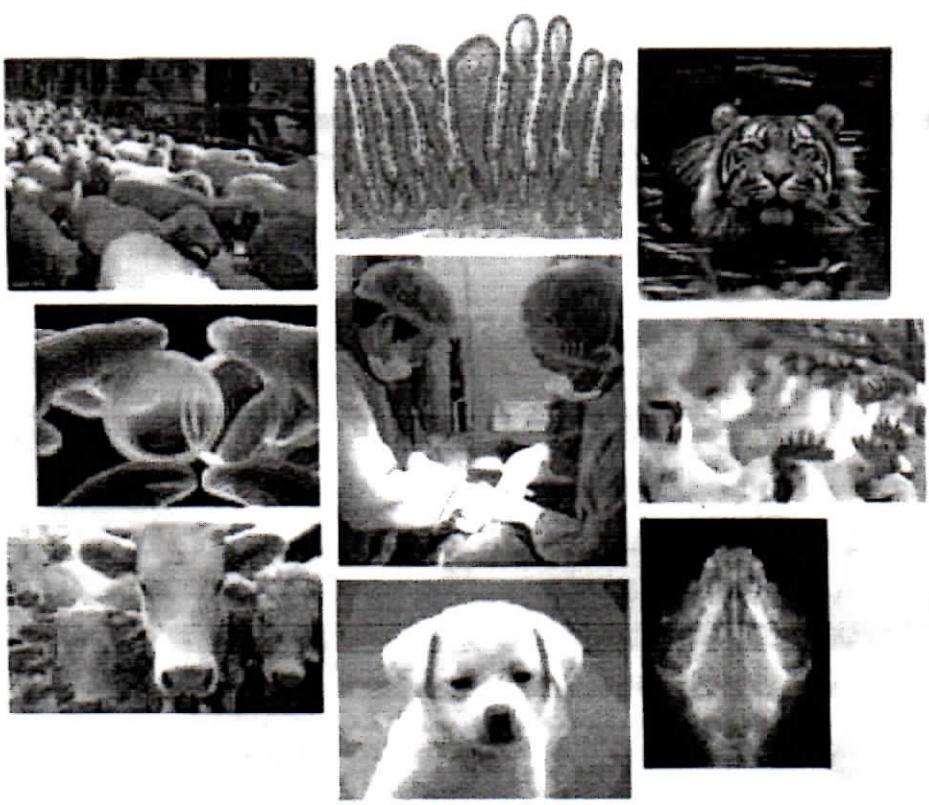
The First Congress of

SEAVSA

(South East Asia Veterinary School Association)

Animal Health & Production for Better ASEAN Quality of Life

Challenge of Veterinary Education



The 1st Congress of SEAVSA

IPB International Convention Centre
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ANTIHYPERGLYCAEMIC EFFECT OF *AZADIRACHTA INDICA* J EXTRACT ON ALLOXSAN–INDUCED DIABETIC RAT

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Keywords: *Azadirachta indica J* ,antihyperglycaemic, ethanol extract.

Introduction

Diabetes mellitus is a metabolic disease as old as mankind and its incidence is considered to be high (4 5%) all over the world . It is also a major cause of disability and hospitalization and it results in significant financial burden . The management of diabetes mellitus is considered a global problem and successful treatment is yet to be discovered.(1) Besides drugs classically used for the treatment of diabetes (insulin, sulphonylureas, biguanides and thiazolidinediones), several species of plants have been described in scientific and popular literature as having hypoglycemic activity Because of their perceived effectiveness, minimal side effects in clinical experience and relatively low costs, herbal drugs are prescribed widely even when their biologically active compounds are unknown. In traditional practice medicinal plants are used in many countries to control diabetes mellitus. Plant drugs are frequently considered to be less toxic and more free from side effects than synthetic ones(Pari and Umamaheswari 2000). Plants that are used empirically to reduce blood sugar levels are *Azadirachta indica* J leaves. *Azadirachta indica* J plants have long known that a tree which has many benefits for the drug itching seeds, its leaves are used to drive the flies on the cow, even the trunk can be used for household needs.

Materials and Methods

Animals and diet: Male *Spraque Dawley* rats obtained from the animal house of Pathology Laboratory, weighing 150-220 g was used in the entire study. The animals were acclimatized to standard laboratory conditions (temperature 24 ± 1ºC, relative humidity 55 ± 5% and a 12 hours photoperiod) in suspended wire-meshed galvanized cages (4-6 rats/ cage) for one week before the commencement of the experiment. During the entire period of study, the rats were supplied with a semipurified basal diet and water *ad libitum.* All animals were maintained according to the published criteria of Saha et al., 2001.

Experimental induction of diabetes in rats: The rats were injected with alloxan monohydrate dissolved in sterile normal saline at a dose of 150 mg_kg body wt. intraperitoneally (Al-Shamaony et al., 1994). After 2 weeks, rats with moderate diabetes having glycosuria Žindicated by Benedict's qualitative test. and hyperglycaemia (i.e. with a blood glucose of 200 - 260 mg_dl.were used for the experiment.

Estimation of blood sugar: Blood glucose was measured using a Blood Glucose Meter. This method based on the reaction between glucose and NAD + to glukonolakton by glukodehidrogenase enzyme (β-D-glucose: NAD-oksidoreduktase, EC 1.1.1.47 Glukosa darah diukur menggunakan *Blood Glucose Meter.* Metode ini Berdasarkan reaksi antara glukosa dan NAD^+ menjadi glukonolakton oleh enzim glukodehidrogenase (β-D-glukosa: NAD-oksidoreduktase,EC 1.1.1.47).

Animal experiments are divided into six groups:

1. Group I :
   Normal rats given with 2 ml of normal saline;
2. Group II:
   Diabetic control rats given with 2 ml of normal saline
3. GroupIII :
   Diabetic rats given glibenclamide orally (600 µg/ kg body wt) in aqueous solution daily using intragastric tube for 10 days.
4. Treatment Group(Group IV,V.VI) :
   Diabetic rats given extract Azadirachta Indica J with a concentration 30mg/kg body wt, 60mg/kgBB, and 90mg/kg body wt using an intragastric tube for 10 days. Then blood glucose levels measured on day 10 .

Statistical Analysis: Data measuring test results antihyperglicaemic effect statistically processed using ANOVA test prints range test followed by Duncan's multiple areas to see whether or not the difference.

Results and Discussion

All groups of rat injected alloxsan in intraperitonial showed an increase of glucose levels (hyperglycemia) by 10-82% compared to initial levels, whereas on day 10 post-induction alloxsan seen a decrease in blood glucose levels positive control rat, the control treatment 30,60,90 mg dose / kg body wt

by 7%, 8%, and 14.8%. Based on these results given the control treatment *Azadirachta indica* J leaf extract at a dose of 90 mg / kg BB give the same results with positive control.

Table 1 illustrates the levels of blood glucose change in body weight experimental animals. There was a significant ($P < 0.05$) .elevation in blood glucose decreased in the diabetic animals. The effect of administration of ethanol extract of *Azadirachta Indica J* at 30mg/kg body wt, 60mg/kg body wt, and 90mg/kg body wt. and glibenclamide tended to bring the parameters significantly towards normal values. The effect of ethanol extract *Azadirachta Indica J* was found to be significant at a dose of 0.45 g_kg body wt. and therefore the dose was used for further biochemical studies.

Group	Body weight		Fasting blood glucose	
	Initial	Final	Initial	Final
Goup 1	152,3 ± 10,06	220,3 ± 23,00	93,3± 18,50	91,6 ±18,40
Group 2	137,0 ± 12,70	163,7 ± 18,14	101 ± 10,81	164,6 ± 2,88
Group 3	134,0 ± 7,10	177,3 ± 13,70	86,6 ± 5,03	112 , 6 ± 4,04
Group 4	142,3 ± 13,05	170,7 ± 5,13	88,5 ± 8,50	136 ,3 ± 6,11
Group 5	130,7 ± 4,16	175,7 ± 7,50	96,3 ± 18,4	128 ,3 ± 8,08
Group 6	141,3 ± 10,01	171,0± 12,52	84,6 ± 7,57	131,6 ± 2,51

Conclusion

The ethanol extract of leaves of *Azadirachta Indica* Jus has antihyperglycemic activity as it lowers serum glucose level in diabetic rat and significantly increases glucose tolerance. The extract also prevents loss of body weight in diabetic rat.

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