



International Journal of Current Research in Medical Sciences

ISSN: 2454-5716

P-ISJN: A4372-3064, E-ISJN: A4372-3061

www.ijcrims.com



Original Research Article

Volume 3, Issue 11 -2017

DOI: <http://dx.doi.org/10.22192/ijcrms.2017.03.11.001>

Antidiabetic activity of *Ayakaandha abruga chendhuram* on streptozotocin induced diabetes in rats

**Arunachalam K*¹ Thiruthani M² Abdul Kader Jeylani M.P³ Rajarajeshwari A⁴
Chenthamarai selvi G⁵ Rajamaheswari K⁶ Venkateswaran K⁷**

¹PG Scholar, Department of Nanju Noolum Maruthuva Neethi Noolum, (Siddha Toxicology)
Govt Siddha Medical College, Palayamkottai, Tamilnadu, India

^{2,3,4,5} Faculties, PG Department of Nanju Noolum Maruthuva Neethi Noolum, (Siddha Toxicology)
Govt Siddha Medical College, Palayamkottai, Tamilnadu, India

⁶PhD scholar Department of Gunapadam (Siddha Pharmacology) National Institute of Siddha Chennai.
Tamilnadu, India.

⁷Bachelor of Ayurveda medicine and surgery, Govt Ayurveda Medical College, Nagercoil, Tamilnadu,
India.

Corresponding Author: Dr.K.Arunachalam

PG Scholar, Department of Nanju Noolum Maruthuva Neethi Noolum, (Siddha Toxicology)
Govt Siddha Medical College, Palayamkottai, Tamilnadu, India. E- mail: drarunachalam91@gmail.com

Abstract

Siddha herbo mineral formulation *Ayakaandha Abruga Chendhuram* indicated as a best choice of drug to treat diabetes. AAC was evaluated for its antidiabetic activity on streptozotocin induced diabetes in rats. At the end of the results, can found that these drug AAC has hypoglycaemic effect. Oral administration of AAC (25mg/kg), significantly reduced the elevated blood glucose levels as the duration of drug administration increases. Further clinical study will be carried out for the benefit of diabetes patients.

Keywords: Ayakaandha abruga chendhuram, Madhumegam, chendhuram, AAC, Anti diabetic activity

Introduction

Siddha system is one of the oldest conventional medical system in the world. Siddha system not only helps to treat the human diseases and also helps to attain soul satisfaction. The usage of heavy metals in siddha system of medicine having some queries regarding the threatening effects of those metals which in use though metallic siddha

medicinal formulations. Because herbo metallic preparations like chendhuram type of medicines having some advantages like include better stability, lower dosage, ease of storability and sustained availability.

Materials and Methods

Animals

Male Wistar albino rats weighing 180 – 200 gms were used for the study. The animals were obtained from animal house, Nandha College of Pharmacy, Erode. The animals were placed at random and allocated to treatment groups in polypropylene cages with paddy husk as bedding. Animals were housed at a standard environmental condition (Humidity of 30 – 70 % and 12:12 light: dark cycle at 24±2°C). All animals were allowed to free access to water and fed with standard commercial pelleted rat chaw (M/s. Hindustan Lever Ltd, Mumbai). All the experimental procedures and protocols used in this study were reviewed by the Institutional Animal Ethics Committee (688/PO/Re/S/02/CPCSEA) and were in accordance with the Institutional ethical guidelines.

Experimental induction of diabetes

After overnight fasting, diabetes was induced by intra peritoneal injection of streptozotocin (STZ) dissolved in 0.1 M cold sodium citrate buffer, pH 4.5, at a dose of 55 mg/kg (Aslam *et al.*, 2007). The control rats received the vehicle alone. The animals were allowed to drink 5% glucose solution overnight to overcome the drug-induced hypoglycemia. After 1 week time for the

development of diabetes, the rats with moderate diabetes having hyperglycemia (blood glucose range of above 200 mg/dl) were considered as diabetic rats and used for the experiment.

Experimental protocol

Rats were divided in to 4 groups of 6 animals each. Group I – Normal control (Non – diabetic) received distilled water 1ml/kg PO for 14 days. Group II– diabetic rats received distilled water 1ml/kg PO for 14 days. Group III – diabetic rats received Standard drug Glibenclamide 5mg/kg PO for 14 days. Group IV - diabetic rats received 25mg/kg of Ayakaandha Abraga Chenduram for 14 days. Blood was withdrawn from tail vein on 0, 4th, 7th and 14th day of drug administration and glucose levels were measured using glucometer (Accu Check Active).

Statistical analysis

The values were expressed as mean ± SEM. The statistical analysis was carried out by one way analysis of variance (ANOVA) followed by Dunnet's 't' - test. P values <0.05 were considered significant.

Results

Table: 1. The table shows the antidiabetic activity of Ayakaandha Abraga Chenduram on Streptozotocin Induced Diabetes in Rats.

Drug Treatment	Blood Sugar Level (mg/dl)					
	Initial	After STZ	0 day	4 th day	7 th day	14 th day
Normal control Distilled Water (1ml/kg)	96.35± 5.77	99.55± 3.12	92.70± 5.55	105.78± 6.90	94.58± 7.35	103.22± 6.75
Diabetic Control STZ (55mg/kg)	101.57± 6.93	224.60± 8.32	220.87± 8.49	226.54± 6.05	225.88± 8.95	225.40±
Standard Glibenclamide (5mg/kg)	91.08± 4.30	219.85± 7.64	216.53± 7.75	164.52± 8.94**	119.45± 5.90***	113.00± 5.70***
AAC (25mg/kg)	90.40± 6.33	220.47± 6.90	219.55± 6.62	171.97± 6.66*	133.58± 7.02**	109.66± 6.20***

Values are in mean ± SEM (n=6), *P<0.05, **P<0.01, ***P<0.001 Vs Diabetic Control

The results of antidiabetic activity of Ayakaandha Abraga Chendhuram on Streptozotocin induced diabetic in rat was shown on table 1. Administration of STZ, to rats elevated the mean blood glucose levels in rats. Oral administration of AAC (25mg/kg), significantly reduced the elevated blood glucose levels as the duration of drug administration increases. On 4th day, AAC significantly ($P<0.05$) reduced the blood glucose level as compared to control. On 7th and 14th day of treatment, AAC significantly ($P<0.01$ and $P<0.001$, respectively) decreased the blood sugar levels compared to diabetic control. The reference control, glibenclamide showed significant ($P<0.001$) reduction in blood glucose from 4th day on wards. On 14th day both AAC and glibenclamide showed similar antidiabetic effect against STZ induced hyperglycaemic effect.

Discussion

Diabetes is a chronic disease that occurs when the body cannot produce enough insulin or cannot use insulin effectively. Glibenclamide is a commonly used sulfonylurea. Glibenclamide produce Hypoglycaemia, nausea, vomiting, cholestatic jaundice and allergic reactions. Sulfonylureas can precipitate a disulfiram like reaction on consumption of alcohol.

Conclusion

Ayakaandha abraga chendhuram and glibenclamide showed similar antidiabetic effect against STZ induced hyperglycaemic effect. Patients on sulfonylureas may have an increase in the rate of cardiovascular death. But Ayakaandha abraga chendhuram will never cause any adverse effects and also protect the heart because in presence of iron and magnetic oxide of iron. The heavy metals were present in AAC within permissible limits as per norms of World health organization. Oral administration of AAC (25mg/kg), significantly reduced the elevated blood glucose levels.

Acknowledgements

The Authors wish to thank the Vice Chancellor, The Tamilnadu Dr.MGR Medical University Guindy Chennai and Specially Thank To The Principal, Govt Siddha Medical College Palayamkottai and to Mr.S.Krishnasamy Mrs.K Revathi for their support to complete this study. My sincere thanks to Prof.Dr.S.Sengottuvelu PhD Department of Pharmacology Nandha Pharmacy College Erode, Tamilnadu, India.

References

1. Sigicha rathina dheebam C.kannusamypillai 1991 Edition page no 250
2. Dr.R.Thiyagarajan,LIM.,Gunapadam Thathu vaguppu
3. K.S.Murugesu Mudhaliar,Gunapadam mooligai vaguppu
4. Iron compounds and their preparations, inorganic pharmaceutical chemistry
5. The wealth of India vol.4
6. M.Nadkarni, the Indian material medica with ayurvedic, unani, and home remedies
7. T.V.Sambasivam pillai, The research institute of siddhar's science vol.1
8. Aslan M, Orhan DD, Orhan N, Sezik E, Yesilada E. *In vivo* antidiabetic and antioxidant potential of *Helichrysum plicatum* ssp. *plicatum capitulum* in streptozotocin induced diabetic rats. J Ethnopharmacol. 2007;109:54–59.
9. Medical pharmacology Padmaja udaykumar fourth edition
10. Functional groups identification through FTIR Characterization of siddha poly herbal formulation 'Muppirandai chooranam' Arunachalam K Thiruthani M
11. Textbook of Pathology Harsh mohan Sixth edition
12. Novel standardization method and characterization of Ayakandha chenduram Efficient Herbal Medicine for Anemia
13. Siddha materia medica (mineral and animal kingdom) Glossary of Indian medicinal plants with Active principles.

14. Taxonomy of Angiosperms
S.Sankaranarayanan M.S.C., M.Phil year of
edition 2009
15. Siddha Material Dr.Anaivaari anandhan Ph.D
Dr.M.Thulasimani M.D(pharm)
16. Dr.Anaivaari anandhan Ph.D Year of edition
2008 Siddha material medica
17. Dr.K.S.Narayan reddy The essentials of
forensic medicine and Toxicology year of
2014
18. Rajesh bardale Principles of forensic medicine
and Toxicology First edition 2011
19. Apurba Nandy Principles of Forensic
medicine including Toxicology Third edition
20. Mohammad ali, Nisha chaudhary, Ficus
hispida Linn.: A review of its pharmacognostic
and ethnomedicinal properties, Pharmacogn
Rev, 2011 Jan-Jun; 5(9): 96–102.
21. Richa Tyagi , Ekta Menghani, A Review on
Plumabgo zeylanica : A Compelling Herb,
International Journal of Pharma Sciences and
Research (IJPSR), Vol 5 No 04, Apr 2014,
page no: 119-126.
22. Radadiya Sweta J, Raval Bhumi A, Ranipa
Chandni J, Desai Tusharbindu R and Pandya
Devang J, Pharmacognostic Evaluation of
Aristolochia Bracteata, International Journal of
Innovative Pharmaceutical Research. 2012,
3(1), 179-182

Access this Article in Online	
	Website: www.ijcrims.com
	Subject: Siddha Medicine
Quick Response Code	

[How to cite this article:](#)

Arunachalam K, Thiruthani M, Abdul Kader Jeylani M.P, Rajarajeshwari A, Chenthamarai selvi G, Rajamaheswari K, Venkateswaran K. (2017). Antidiabetic activity of *Ayakaandha abruga chendhuram* on streptozotocin induced diabetes in rats. Int. J. Curr. Res. Med. Sci. 3(11): 1-4.

DOI: <http://dx.doi.org/10.22192/ijcrms.2017.03.11.001>