38th EPS
European Peptide Symposium
6 - 11th of September 2026
Vienna, Austria

Antidiabetic Effects of Cyclotide-Rich Extracts from Selected Nigerian Medicinal Plants: An Ethnopharmacological Approach

Latifat. O. SIDIQ[1,2,] Abraham.O. NKUMAH[2] & Omonike.O OGBOLE[2]*

[1] Faculty of Pure and Applied Sciences, Department of Plant and Environmental Biology, Kwara State University, Malete. Nigeria
[2] Faculty of Pharmacy, Department of Pharmacognosy, University of Ibadan, Ibadan. Nigeria
https://doi.org/10.17952/38EPS.2026.P377

*Author for Correspondence (Email: nikeoa@yahoo.com)

Introduction

Cyclotide has attracted great interest from both pharmaceutical industry and academia as potential scaffolds in drug design, due to exceptional properties of circular topology (Wang *et al*., 2024). They have been identified with versatile biological activities, including hypoglycemic properties (Tran *et al*., 2023; Gattringer *et al*., 2012). Diabetes mellitus is a metabolic disorder characterized by high level of sugar in the blood due to insufficient insulin production or insulin resistance (Nyakudya *et al*., 2020). The various undesirable effects associated with synthetic anti-diabetic drugs have necessitated search for safer treatment agents from plants. Therefore, this study investigated antidiabetic properties of cyclotide-rich extracts of selected plants using invitro and in-vitro assays.



Results

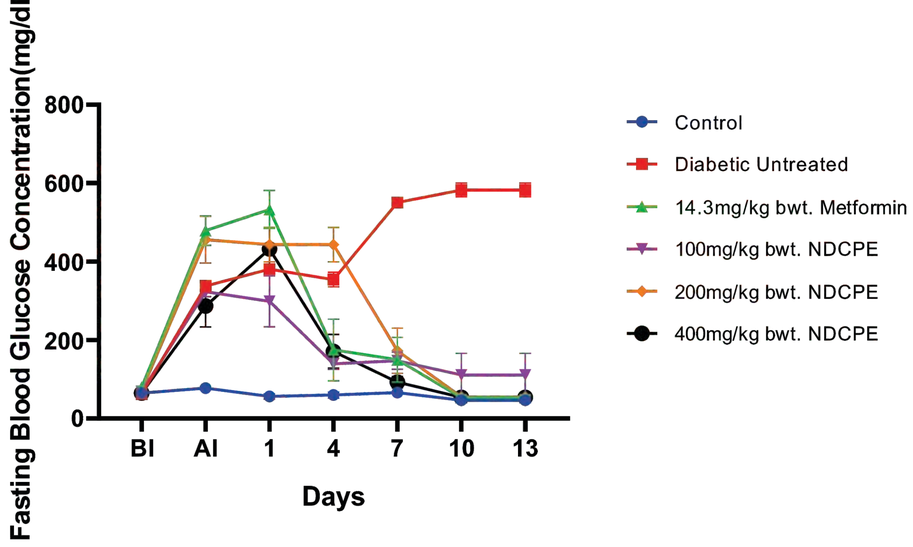


Figure 1: Effect of cyclotide-rich leaf extract of *Nauclea diderichii* on Fasting Blood Glucose (mg/dL) in streptozotocin (STZ) -induced diabetic rats

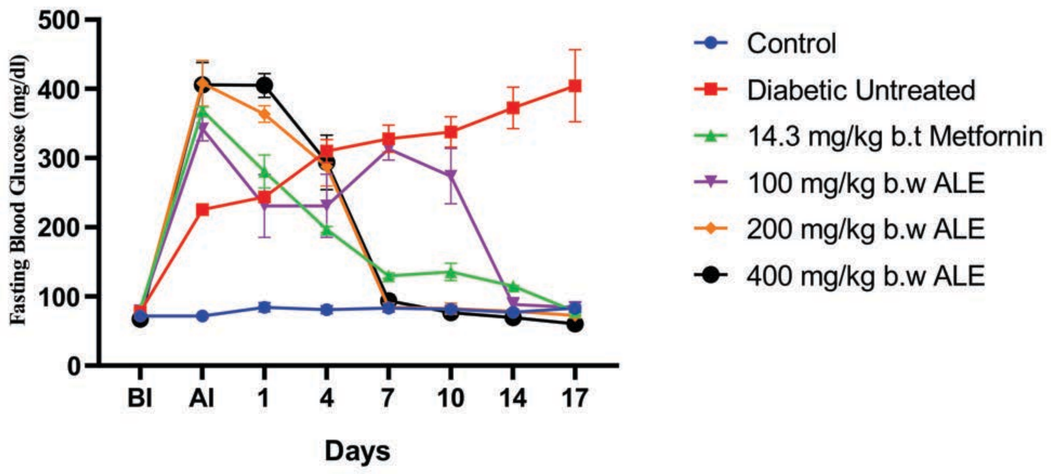


Figure 2: Effect of cyclotide-rich leaf extract of *Alchornea laxiflora* on Fasting Blood Glucose (mg/dL) in streptozotocin (STZ) -induced diabetic rats

Take-home message and Outlook

- *N. diderrichii* extract at 400 mg/kg b.wt. significantly ($P<0.05$) lowered blood glucose level from 7th day onwards till the end of the experiment which compared favourably with metformin at 14.3 mg/kg b.wt. *A. laxiflora* extract at 200 and 400 mg/kg b.wt. significantly ($P<0.05$) lowered blood glucose level and significantly performed better than metformin (14.3 mg/kg b.wt.) at 400 mg/kg b.wt.
- Cyclotide-rich extracts of both plants significant possessed antidiabetic properties.
- Extracts will be subjected to further peptide purification to obtain pure peptide which shall be evaluated for antidiabetic properties.

Acknowledgement

We specially thank Kwara State University (KWASU), Malete, Nigeria for the partial funding of the conference participation.

Selected References

1. Koehbach, J., O'Brien, M., Muttenthaler, M., Miazzo, M., Akcan, M., Elliott, A.G., Daly, N.L., Harvey, P.J., Arrowsmith, S., Gunasekera, S., Smith, T.J., Wray, S., Göransson, U., Dawson, P.E., Craik, D.J., Freissmuth, M. and Gruber, C.W. 2013b. Oxytocic plant cyclotides as templates for peptide G protein-coupled receptor ligand design. Proc Natl Acad Sci U S A, 110: 21183–8.