Latin American Journal of Pharmacy
(formerly *Acta Farmacéutica Bonaerense)*
Lat. Am. J. Pharm. **38** (3): 531-8 (2019)

Received: September 30, 2018
Accepted: December 25, 2018

Preclinical Anti-diabetic Evaluation of N'-2,N'-4,N'-6-tris (4-Hydroxybenzylidene)Pyridine-2,4,6-Tricarbohydrazide

Zohaib Abbas KHAN [1], Mobasher AHMAD [1,2], Sairah H. KAMRAN [1] *, Rukhsana ANWAR [1], Fizza MOBASHER [3], Tanzeel-ur REHMAN [4] & Sadaf RIAZ [4]

[1] *Punjab University College of Pharmacy, University of the Punjab, Allama Iqbal Campus, 54000, Lahore, Pakistan*
[2] *Dean Pharmacy, Gulab Devi Educational Complex, Lahore*
[3] *King Edward Medical University (KEMU), Lahore, Pakistan*
[4] *Department of Chemistry, Govt. College University, Lahore, Pakistan*

***SUMMARY*. This study was carried out to investigate the preclinical anti diabetic effects of a novel synthetic compound, N'-2,N'-4,N'-6-tris(4-hydroxybenzylidene)pyridine-2,4,6-tricarbohydrazide (TPTH) in alloxan induced diabetic mice. Different doses of TPTH (5, 10, 25, 50, and 100 mg/kg) were analysed in alloxan treated diabetic mice at different time intervals (0, 2, 4, 6, 8, 10 and 24 h) and compared with the control diabetic group. The chronic study was conducted for 21 days and comprised of four groups of mice (n = 6): non-diabetic group, control diabetic group, acarbose (10 mg/kg) treated group, and TPTH (50 mg/kg) treated group. The weight and glucose levels were determined after every seven days. At the end of the study the blood glucose levels, HbA1c, serum insulin, glycogen content in liver and skeletal muscles, serum transaminases, bilirubin, total protein, urea, creatinine, cholesterol, triglycerides, and CBC of all the groups was analysed. Histopathological analysis of pancreas, liver, and kidney was done using H&E staining. Significant decrease in blood glucose for up to ten h was observed with TPTH 50 mg/kg during 24 h study. The chronic study showed that TPTH 50 mg/kg significantly reduced all the biochemical parameters analysed except insulin and blood cells. The histopathological analysis of the treated group showed less damage to the anatomical structures of pancreas, liver and kidney. Hence it could be suggested that TPTH possess significant anti-diabetic activity.**

RESUMEN. Este estudio se llevó a cabo para investigar los efectos anti-diabéticos preclínicos de un compuesto sintético novedoso, el N'-2,N'-4,N'-6-tris(4-hidroxibenciliden)piridina-2,4,6-tricarbohidracida (TPTH) en ratones diabéticos inducidos por alloxan. Se analizaron diferentes dosis de TPTH (5, 10, 25, 50 y 100 mg/kg) en ratones diabéticos tratados con alloxan a diferentes intervalos de tiempo (0, 2, 4, 6, 8, 10 y 24 h) y se compararon con el control grupo diabético El estudio crónico se realizó durante 21 días y estuvo compuesto por cuatro grupos de ratones (n = 6); grupo no diabético, grupo control diabético, grupo tratado con acarbosa (10 mg/kg) y grupo tratado con TPTH (50 mg/kg). El peso y los niveles de glucosa se determinaron después de cada siete días. Al finalizar el estudio se analizaron los niveles de glucosa en sangre, HbA1c, insulina sérica, contenido de glucógeno en el hígado y los músculos esqueléticos, transaminasas séricas, bilirrubina, proteína total, urea, creatinina, colesterol, triglicéridos y CBC de todos los grupos. El análisis histopatológico del páncreas, el hígado y el riñón se realizó mediante tinción H&E. Se observó una disminución significativa de la glucosa en sangre durante hasta diez horas con TPTH 50 mg kg durante las 24 horas de estudio. El estudio crónico mostró que la TPTH 50 mg / kg redujo significativamente todos los parámetros bioquímicos analizados, excepto la insulina y las células sanguíneas. El análisis histopatológico del grupo tratado mostró menos daño a las estructuras anatómicas del páncreas, hígado y riñón. Por lo tanto, se podría sugerir que TPTH posee una actividad antidiabética significativa.

KEY WORDS: alpha-glucosidase inhibitors, antidiabetic, diabetes, hepatoprotective, pyridine analogue.

* Author to whom correspondence should be addressed. *E-mail:* sairah.shahid@gmail.com

ISSN 0326 2383 (printed ed.)
ISSN 2362-3853 (on line ed.)