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Protective Effect of Neohesperidin in Streptozotocin Induced Kidney Damage in Diabetic Rats

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***SUMMARY*. This study was designed to evaluate the protective role of Neohesperidin (NH) on streptozotocin (STZ)-induced diabetes mellitus in rats and determine the associated mechanisms. Rats were randomized into six groups: Normal control, STZ (60 mg/kg) induced diabetic rats, STZ + NH (200 mg/kg), STZ + NH (200 mg/kg), STZ + Glibenclamide (600 *μ*g/kg) and NH alone (200 mg/kg). After 45 days, the plasma glucose, HbAC1, insulin level, carbohydrate metabolizing enzyme (Glucokinase, Glucose 6-Phosphatase, Fructose 1,6 -bisphosphatase and Glucose 6-phosphate dehydrogenase), biochemical parameters such as AST, ALT, urea, uric acid, creatinine, total cholesterol, triglycerides, phospholipids, Free fatty acids, Low-density Lipoprotein-C and High-density Lipoprotein-C and antioxidant enzymes status were measured. A pathological condition of the liver, kidney and pancreas was examined by hematoxylin-eosin (H&E) staining. After 45 days of treatment, the results showed that NH had significant anti-hyperglycemic and total cholesterol-lowering effects and its treatments improved serum high-density lipoprotein (HDL) cholesterol levels. NH also enhanced glucose tolerance and the histological state of the liver in diabetic rats and exhibited intriguing antioxidant activities.**

RESUMEN. Este estudio fue diseñado para evaluar el papel protector de la neohesperidina (NH) sobre la diabetes mellitus inducida por estreptozotocina (STZ) en ratas y determinar los mecanismos asociados. Las ratas se aleatorizaron en seis grupos: Control normal, STZ (60 mg/kg) ratas diabéticas inducidas, STZ+NH (200 mg/kg), STZ + NH (200 mg/kg), STZ + Glibenclamida (600 *μ*g/kg) y NH solo (200 mg/kg). Después de 45 días, la glucosa plasmática, HbAC1, nivel de insulina, enzima metabolizadora de carbohidratos (glucoquinasa, glucosa 6-fosfatasa, fructosa 1,6-bisfosfatasa y glucosa 6-fosfato deshidrogenasa), parámetros bioquímicos como AST, ALT, urea, ácido úrico , creatinina, colesterol total, triglicéridos, fosfolípidos, ácidos grasos libres, lipoproteína C de baja densidad y lipoproteína C de alta densidad y estado de enzimas antioxidantes. Se examinó una condición patológica del hígado, riñón y páncreas mediante tinción con hematoxilina-eosina (H&E). Después de 45 días de tratamiento, los resultados mostraron que NH tenía efectos antihiperglucémicos y reductores del colesterol total significativos y sus tratamientos mejoraron los niveles de colesterol de lipoproteínas de alta densidad (HDL) en suero. NH también mejoró la tolerancia a la glucosa y el estado histológico del hígado en ratas diabéticas y exhibió intrigantes actividades antioxidantes.

KEY WORDS: diabetes mellitus, glucose, insulin, neohesperidin,

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