

Effect of Aliskiren, Telmisartan and Torsemide on cardiac dysfunction in L-nitro arginine methyl ESTER (L-NAME)- induced hypertension in Rats.

Thesis
submitted in Partial fulfillment of the MD degree in
Pharmacology

By
Eman Sayed Said,
Assistant lecturer of Pharmacology, Faculty of Medicine,
Fayoum University

Supervisors

Prof. Dr. Sawsan Abd El-Aziz Sadek
Professor of Pharmacology,
Faculty of Medicine, Fayoum University

Prof. Dr. Laila Ahmed Rashed
Professor of medical biochemistry and molecular biology,
Faculty of Medicine, Cairo University

Dr. Amira Mohammed Bassam
Lecturer of pathology,
Faculty of Medicine, Cairo University

Faculty of Medicine
Fayoum University
2014

Abstract

A comparative study of cardio protective effect of aliskiren, telmisartan and torsemide was carried out on L-nitro arginine methyl ESTER (L-NAME) - induced hypertension in rats. The degree of protection was assessed by measurement of systolic blood pressure and heart rate of animals every two weeks by noninvasive blood pressure from the tail of conscious rats by the tail-cuff technique. Heart rate was recorded automatically by a counter triggered by the pulse wave. At the end of the experimental period (8 weeks) blood sampling was carried out for estimation of the level of NO₂ - /NO₃- .After that animals were sacrificed for heart dissection to detect collagen type I and III gene expression. Also histopathological study was done using Hematoxylin and Eosin as a basic stain and collagen-specific stain Masson's trichrome is used to evaluate the extension of collagen deposits. Three drugs were given P.O daily for 8 weeks in a dose of 30 mg/kg /day for aliskiren and 10 mg/kg/day for telmisartan while torsemide was given in a dose of 0.2 mg/kg orally every 12 hours. The selected drugs were given simultaneously with L-NAME 50 mg/kg per day orally. In conclusion this study revealed that the three drugs aliskiren, telmisartan and torsemide decreased blood pressure significantly compared to L-NAME. There is no significant difference between aliskiren and telmisartan in all measurements. There were insignificant changes in pulse rate values between the three L-NAME treated groups through the experiment. The three drugs significantly increase NO compared to L-NAME. Collagen I and III were significantly decreased by the three drugs but the highest percentage of inhibition was with telmisartan compared to L-NAME. Comparing the percentage inhibition of fibrosis between the three L-NAME treated groups, there was insignificant difference between telmisartan and torsemide treated groups while both are superior to aliskiren.

Key words:

Aliskiren Telmisartan Torsemide L-NAME Heart