



Research 6:

Assessment of the Cardioprotective Effect of Liraglutide on Methotrexate Induced Cardiac Dysfunction through Suppression of Inflammation and Enhancement of Angiogenesis in Rats

Rania H. Mahmoud¹, Marwa Abdeltawab Mohammed², Eman S. Said^{3&7}, Enas M. Morsi⁴, Omayma O. Abdelaleem¹, Marwa O. Abdel All⁵, Ramadan M. Elsayed⁶, Eman A. Abdelmeguid⁶, Doaa E. Eldosoki⁵.

¹Department of Medical Biochemistry and Molecular Biology, Faculty of Medicine, Fayoum University, Fayoum, Egypt.

²Department of Physiology, Faculty of Medicine, Beni-Suef University, Beni-Suef, Egypt.

³Clinical Pharmacology,

⁴Forensic medicine and clinical toxicology, ⁵Histology and ⁶Anatomy departments, Faculty of Medicine, Fayoum University, Fayoum, Egypt.

⁷Department of Pharmacology and Toxicology, College of Pharmacy, Qassim University, Buraydah, Saudi Arabia.

Introduction: Methotrexate (MTX) is one of the most commonly used anti-cancer drugs for various types of neoplasms. It is associated with multiple cytotoxic effects including nephrotoxicity, hepatotoxicity and cardiotoxicity. Liraglutide (LIR) is a potent anti-diabetic drug and also has antioxidant and anti-inflammatory properties. **Objective:** In this study, we tried to investigate the protective effect of LIR on MTX induced cardiotoxicity and to identify the molecular mechanisms for this protection. **Materials and methods:** Rats were divided into 4 groups including control group, LIR group, MTX group and LIR + MTX group. ECG was measured then blood samples were taken and hearts were excised for biochemical and histological investigations. **Results:** MTX group exhibited a mild non significant irregular bradycardia, an increase of CK-MB besides a decrease of total antioxidant capacity. MTX administration also resulted in down regulation of vascular endothelial growth factor (VEGF), while caused up regulation of interleukin 1 beta (IL-1B) and interleukin 6 (IL-6) in comparison to control group. Also, MTX group showed histological abnormalities besides negative VEGF and positive iNOS as detected by immunohistochemical staining compared to the control group. LIR

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أ.د/ عاصم العيسوي

رئيس القسم

أ.د/ حنان عبدالمنعم



administration could reverse these results. **Conclusions:** LIR prevented MTX induced cardiotoxicity through its antioxidant and anti-inflammatory properties.

Key words: Methotrexate, Liraglutide, cardiotoxicity, vascular endothelial growth factor, Interleukin 1 beta, interleukin 6

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أ.د/ عاصم العيسوي

رئيس القسم

أ.د/ حنان عبدالمنعم