

JOINT EVENT

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**Beneficial Effects of Adipose-Derived-Mesenchymal Stem Cells (AD-MSCs) versus Anti-Parkinson drug in a rat model of Parkinson's disease: Relationship to the molecular genetic expressions, ultrastructural and physiological responses****Naglaa K Idriss<sup>3</sup>, Fatma Y. Meligy<sup>1</sup>, Dalia A. Elgamal<sup>1</sup>, Eman S.H. Abd Allah<sup>2</sup>, Nagwa M. Ghandour<sup>4</sup>, Ehab R. Biomy<sup>5</sup>, Azza Sayed Abdelrehim Khalil<sup>6</sup> and Mostafa Elkhashab<sup>7</sup>**<sup>1</sup>Department of Histology and Cell Biology. Faculty of Medicine, Assiut University, Assiut, Egypt<sup>2</sup>Department of Medical Physiology. Faculty of Medicine, Assiut University, Assiut, Egypt<sup>3</sup>Department of Medical Biochemistry. Faculty of Medicine, Assiut University, Assiut, Egypt<sup>4</sup>Department of Forensic Medicine and Clinical Toxicology. Faculty of Medicine, Assiut University, Assiut, Egypt<sup>5</sup>Department of plastic surgery .Faculty of Medicine, Assiut University, Assiut, Egypt<sup>6</sup>Department of Anatomy. Faculty of Medicine, Princess Nourah Bint Abdulrahman University, Riyadh, KSA<sup>7</sup>Department of Neurosurgery, Hackensack University Medical Center, New Jersey, USA

**Background:** Parkinson's disease is the most common chronic progressive neurodegenerative disorder after Alzheimer's disease. The effectiveness of anti-Parkinson treatments gradually diminished by the progressive degeneration of the dopaminergic terminals. The current research investigated the effect of adipose-derived mesenchymal stem cells (AD-MSCs) versus anti-Parkinson drug in a Parkinsonism rat model.

**Methods:** Forty adult rats divided into 4 equal groups; Group I; control group received the vehicle. Group II; Parkinson's disease group, received rotenone 2mg/kg daily intraperitoneally for one month. Group III received rotenone at the same previous dose then received isolated AD-MSCs on day 14. Group IV received rotenone at the same previous dose then received carbidopa/levodopa on day 14. Behavioral tests were carried out and midbrain specimens were processed for light and electron microscopy. Genetic expression of Glial fibrillary acidic protein (GFAP) and Nestin mRNA were assessed by Real Time-PCR. Lamin-B1 and Vimentin genes were detected by gel electrophoresis and plasma levels of Angiopoietin-2 and Dopamine were measured by ELISA.

**Results:** Rotenone induced pronounced motor deficits, neuronal and glial alterations AD-MSCs group showed improvements in the motor function and microscopic picture. Fold Change of both genes (GFAP and Nestin) were decreased significantly in AD-MSC and carbidopa/levodopa group compared to Parkinson's disease. Lamin-B1 and Vimentin genes were highly expressed in Parkinson's disease. Plasma levels of Angiopoietin-2 and Dopamine were significantly increased after treatment ( $P < 0.001$ ) compared to Parkinson's disease.

**Conclusions:** Adipose-Derived-Mesenchymal Stem cells reduced neuronal degeneration more efficiently than the anti-Parkinson drug did in a Parkinsonism rat model.

**Biography**

Dr Naglaa Kamal Idriss MBBCh, MSc, MD. Assistant Professor of Medical Biochemistry, Faculty of Medicine, Assiut. PHD Birmingham University, City hospital, United Kingdom 2008, Post doctoral visiting researcher at Southampton University General hospital UK, 2016. She has 48 published articles [https://www.researchgate.net/profile/Naglaa\\_Idriss3](https://www.researchgate.net/profile/Naglaa_Idriss3). She is member for European society of cardiology (ESC) and international stem cell research society (ISSRS), Acute Cardiovascular care association member (ACC), Member of working group of thrombosis (W.G Thrombosis) and Society of heart valve diseases SHVD

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