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Effect of Voluntary Running on Expression of Myokines in Brains of rats with Depression

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The study demonstrated the expression of muscle-derived myokines in the dentate gyrus (DG), medial frontal cortex (mFC) and cerebellum during depression and after voluntary exercise. Depression was developed by forced swimming (15 minutes/day) for 2 weeks and evaluated by automatic monitoring of the locomotor activity. Voluntary exercise was performed through accessing voluntary rat wheel for 3 weeks. Brain sections were processed and immunostained with antibodies against BDNF, MIF, VEGF and IL6. Light microscopic study and measuring the integrated optic density (IOD) of the photographs using ImajeJ software were performed to evaluate the myokines expression. Microscopically, BDNF was expressed in the cytoplasm and nuclei of nearly all neurons of DG, mFC and in granular and Purkinje cells of the cerebellum. MIF expression was mainly cytoplasmic in neurons of subgranular zone of DG, neurones of mFC and in Pukinje cells of cerebellum. VEGF showed cytoplasmic expression in many neurons of DG, mFC and in purkinje cells. IL6 was also cytoplasmic but expressed more in the glial cells, endothelial cells and purkinje cells. After voluntary running protocol; the IOD of BDNF increased significantly in upper and lower limbs of DG (P= 0.005 and p<0.001 respectively), mFC (P=0.001) and cerebellum (P=0.001). IOP of MIF significantly increased in both limbs of DG (p<0.001), mFC (p=0.001) but not in the cerebellum (P=0.052). IOP of VEGF and IL6 showed significant increase of in both limbs of DG (p<0.001), mFC (p<0.001) and cerebellum (p=0.001). The study could re-define the muscle derived myokines that might help in managing depression.

Biography

Magda Ahmed Eldomiaty has completed his PhD at the age of 37 years from Tanta University and postdoctoral studies from Tanta University College of Medicine Egypt. She is prof. Of Anatomy and embryology in Taibah University Saudi Arabia, Tanta University Egypt. She is international reviewer in many international journals. She has published more than 25 papers in reputed journals and has been serving as an editorial board member of Edorium Journal of Anatomy and Embryology.

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