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Creatine monohydrate supplementation for 10 weeks has a potential to improve learning and memory in female albino mice following neonatal hypoxia ischemia encephalopathy

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Currently there are no uniform standard treatments for newborn suffering from cerebral hypoxia-ischemia (HI), and to find new and effective strategies for treating the HI injury remains a key direction for future research. Present study was designed to demonstrate the optimal dose (1 or 3%) of creatine monohydrate (Cr) for the treatment of neonatal HI in female albino mice. On postnatal day 10, animals were subjected to left carotid artery ligation followed by 8% hypoxia for 25 minutes. Following weaning on postnatal day 20, mice were divided into three treatments on the basis of diet supplementation (normal rodent diet, 1% and 3% creatine supplemented diet) for 10 weeks. A battery of neurological tests (Rota rod, open field and Morris water maze) was used to demonstrate effect of Cr supplementation on neurofunction and infarct size following HI. Open field test results indicated that Cr supplementation had significantly improved locomotory and exploratory behaviour in subjects. It was observed that Cr treated mice showed better neuromuscular coordination (rota rod) and improved spatial memory (Morris Water Maze test). A significant effect of creatine supplementation in reducing infarct size was also observed. Post hoc analysis of post hoc multiple comparisons revealed that mice supplemented with 3% Cr for 10 weeks performed better during Morris water maze test while 1% Cr supplementation improved the exploratory behaviour and gain in body weight than control group indicating that Cr supplementation has the potential to improve the neurofunction following neonatal brain damage.

Biography

Furhan Iqbal was awarded PhD in Neuroscience from Center for Inborn Errors of Metabolism and Neonatal Screening, University of Science and Technology of China, (USTC) in the year 2009. He holds an MPhil in Animal Physiology from Institute of Biological Sciences Quaid-I-Azam University, Islamabad in the year 2004. He completed his Master's Degree in Zoology from Institute of Pure and Applied Biology, Bahauddin Zakariya University, Multan in the year 2001, and a Bachelor's Degree in Zoology, Botany, Chemistry from Government Degree College Talagang, University of Punjab, Lahore in the year 1998. Currently, he is working as an Associate Professor of Zoology at Bahauddin Zakariya University Multan, Pakistan. His research interests reflect in his wide range of publications in various national and international journals. He won an Indigenous PhD scholarship (Phase II, 2004) from Higher Education Commission of Pakistan. He has experience in DNA/RNA extraction, PCR (Multiplex, Gradient, Touchdown, Real Time, Reverse Transcriptase), Gel electrophoresis, RFLP, Primer designing, DNA mutation analysis.

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