Is the neurogenesis the clue to understanding antidepreiv effect of aerobic exercise? Signaling pathways might be the answer.

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Neurogenesis is the process by which new neurons are generated from progenitor cells or neural stem cells. Recent evidence clearly shows that adult brains are able to show migration of these cells and integrate into previously established circuits. However, this de novo plasticity is very discrete especially in higher mammals (rhesus macaques and homo sapiens), therefore, it is highly debatable whether both the generation and incorporation of new neurons have a clear behavioral value in certain species. Our laboratory has shown that in marines (muss muscles) this generation is highly functional and is related to specific behavioral improvements in spatial and working memory (Morris water maze). In parallel, we have shown that the performance of voluntary exercise by rodents, improves the rate of neurogenesis at the level of the hippocampus and is able to reverse the behavioral phenotype associated with Alzheimer's disease (AD). The central objective is discuss whether neurogenesis is a causal phenomenon in the antidepressant responses observed in patients undergoing exercise protocols or is, on the contrary, an epiphenomenon with clear signs of being an evolutionary vestige in humans. It has been suggested that exercise might ameliorate depressive behavior. Our results suggest that voluntary running has effects on several aspects of AD including amyloid deposition neurogenesis and spatial memory in the double transgenic Apse/PS1ΔE9 mouse model of AD. We report that voluntary wheel running for 10 weeks decreased Aβ burden and Aβ oligomers in the hippocampus. These findings support that voluntary exercise might have therapeutic value on AD and depressive disorders.

Biography

P.T.RobertoVera-Salazar has completed his Neuroscience MSc at the age of 35 years from University of Chile and a fellow Clicical Research in Exercise Physiology in Otago University, NZ. He is associated professor in the Heath Science Faculty at University of Santiago of Chile where teaches Neurophysiology and Exercise Physiology subjects. He is associated research at Neuromolecular Lab in Center of Aging and Regeneration at Pontifical Catholic University of Chile with focus on neurogenesis and aging in murine models. He has published 2 papers in reputed journals and has been serving as an editor in scientific committees.

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