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Exercise can show its antidepressant effects through kisspeptin

Abstract: Exercise has positive effects on the brain; therefore, it has emerged as a promising therapeutic option for individuals with depression. Although considerable research involving humans and animals offers compelling evidence to support the mental health benefits of physical activity, the mechanism by which exercise shows its antidepressant effects remain to be cleared. Kisspeptins are reported to be the most potent activators of the hypothalamus-pituitary-gonadal (HPG) axis known to date. Kisspeptin potently elicits gonadotropin-releasing hormone (GnRH) release and luteinizing hormone (LH) secretion, even in the pre-pubertal period. Beyond the hypothalamus, kisspeptin is also expressed in limbic and paralimbic brain regions, which are areas of the neurobiological network primarily implicated in emotional behaviors alongside sexual functions. Therefore, an increasing body of studies has implicated kisspeptin as having many influences on emotional behaviors. Our previous study showed that the treadmill exercise caused a significant increase in the in kisspeptin and kiss1R gene expression. The study was set out to explore if the kisspeptin/GPR54 signaling system is required for the anti-depressant-like effect of kisspeptin-10 (KP-10), besides the regulation of the HPG axis. To test this concept, peptide 234 (P234), a kisspeptin antagonist, was given to the male rats, and its modulatory effect on the anti-depressant-like effects of kisspeptin was investigated by using a forced swimming test (FST). The study has also sought to know whether kisspeptin can exert its effects through adrenergic and serotonergic receptors. Our data also demonstrate that the anti depressant-like effects of kisspeptin, at least in part, are mediated by an interaction of the alpha-2 adrenergic and 5-HT2 serotonergic receptors.

Keywords: Exercise, kisspeptin, antidepressant effect

Biography: Dr Haluk Kelestimur is a Professor of Physiology in Istanbul Okan University. He gained his PhD in Physiology in 1984 from the University of Firat, Turkey. He then completed his postdoctoral training at University College London in 1988. After he worked 42 years in Firat University, he began to work in Istanbul Okan University in 2022. His work focusses on neuroendocrinology. She has published more than 80 research articles in SCI (E) journals.

Professor Haluk Kelestimur was elected to membership in the International Union of Physiological Sciences Academy in 2021.

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