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Psychiatric complications of long-term anabolic androgenic steroid abuse: An *in vivo* rat study

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Anabolic androgenic steroids (AAS) are abused mainly in sport communities despite their adverse effects. Data in animal models and surveys in humans have revealed psychiatric complications of long-term anabolic androgenic steroid abuse. Depression seems a common adverse reaction. It has been reported that, in a rat model of AAS abuse, behavioural and biochemical changes related to the pathophysiology of depressive disorder appeared. We investigated effects of nandrolone and stanozolol on emotional behaviour and neurochemical brain alterations in rats. Behavioural reactivity to elevate plus maze and social interaction test was used to assess anxiety-related symptoms, and sucrose preference test was used to evaluate anhedonia. Dopaminergic, serotonergic and noradrenergic transmissions were also evaluated in selected brain areas. The chronic administration of nandrolone induced anhedonia and dysfunction of the reward pathway. The behavioural outcomes were accompanied by reductions in the dopamine, serotonin and noradrenaline contents in the nucleus accumbens. Moreover, Wistar rats received repeated injections of stanozolol. Dopamine levels were increased in the hippocampus and decreased in the prefrontal cortex. Serotonin and 5-hydroxy indolacetic acid levels were decreased in all brain areas investigated after stanozolol exposure. In conclusion, our data suggest that nandrolone-treated rats have a depressive profile, accompanied by brain region-dependent changes in dopaminergic, serotonergic and noradrenergic neurotransmission. Stanozolol affects brain monoamines leading to neurochemical modifications possibly involved in depression and stress-related states. It should be highlighted that our data could contribute to a better understanding of the altered rewards induced by AAS treatment and to the development of appropriate treatments.

Biography

Luigia Trabace Graduated in Pharmaceutical Sciences in 1991, she is Full Professor of Pharmacology at the Medical School, University of Foggia. She has been the Director of the Department of Biomedical Sciences at University of Foggia. She has carried out part of her research activity in England, (Department of Cognitive and Molecular Neuroscience, The Babraham Institute, Babraham, Cambridge) and in Milan (Laboratorio di Neurofarmacologia dell'Istituto di Ricerche Farmacologiche "Mario Negri") as visiting scientist. She is referee for many international journals (such as British Journal of Pharmacology, Journal of Neurochemistry, Neuropharmacology, Brain Research, and Pflug Arch European Journal of Physiology). She is serving as Guest Editor of several international reputed journals. She coordinated the PhD Course in Neuroscience. She received national and international prizes. She has focussed her scientific interest on the understanding of the neuro-biochemical mechanisms behind the behavioural changes observed in anabolic androgenic steroids abusers.

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