

Research report

Music improves dopaminergic neurotransmission: demonstration based on the effect of music on blood pressure regulation

Denetsu Sutoo ,  and Kayo Akiyama 

Institute of Medical Science, University of Tsukuba, Tsukuba, Ibaraki 305-8575, Japan

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Abstract

The mechanism by which music modifies brain function is not clear. Clinical findings indicate that music reduces blood pressure in various patients. We investigated the effect of music on blood pressure in spontaneously hypertensive rats (SHR). Previous studies indicated that calcium increases brain dopamine (DA) synthesis through a calmodulin (CaM)-dependent system. Increased DA levels reduce blood pressure in SHR. In this study, we examined the effects of music on this pathway. Systolic blood pressure in SHR was reduced by exposure to Mozart's music (K.205), and the effect vanished when this pathway was inhibited. Exposure to music also significantly increased serum calcium levels and neostriatal DA levels. These results suggest that music leads to increased calcium/CaM-dependent DA synthesis in the brain, thus causing a reduction in blood pressure. Music might regulate and/or affect various brain functions through dopaminergic neurotransmission, and might therefore be effective for rectification of symptoms in various diseases that involve DA dysfunction