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Autonomic Neuroscience

Volume 138, Issues 1&2, 29 February 2008, Pages 50-56

Investigation of specificity of auricular acupuncture points in regulation of autonomic function in anesthetized rats

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<https://doi.org/10.1016/j.autneu.2007.10.003>

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Abstract

Auricular acupuncture has been used for various autonomic disorders in clinical practice. It has been theorized that different auricular areas have distinct influence on autonomic functions. The present study aims to examine the effects of acupuncture stimulation at different auricular areas on cardiovascular and gastric responses. In male Sprague-Dawley rats anesthetized with pentobarbital sodium, five auricular areas, which were located at the apex of the helix (A_1), the middle of the helix (A_2), the tail of the helix (A_3), the inferior concha (A_4) and the middle of the antihelix (A_5), had been selected for stimulation with manual acupuncture (MA) and different parameters of electroacupuncture (EA). A mild depressor response (6%–12% decrease from baseline) was evoked from A_1 , A_3 and A_4 by MA and from all five areas by EA (100 Hz–1 mA). The biggest depressor response (18.4 ± 3.1 mmHg,

$p < 0.001$) was evoked from A₄. A small bradycardia was evoked by MA from A₄ and by EA at A₃, A₄ and A₅. Increase in intragastric pressure (8–14 mmH₂O) was evoked by MA from A₁, A₃ and A₄ and by EA at A₂. These results show that similar patterns of cardiovascular and gastric responses could be evoked by stimulation of different areas of the auricle. The present results do not support the theory of a highly specific functional map in the ear. Rather, there is a similar pattern of autonomic changes in response to auricular acupuncture, with variable intensity depending on the area of stimulation.



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Keywords

Acupuncture; Blood pressure; Heart rate; Gastric motility; Vagus nerve; Ear map

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