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# Effects of far infrared rays irradiated from ceramic material (BIOCERAMIC) on psychological stress-conditioned elevated heart rate, blood pressure, and oxidative stress-suppressed cardiac contractility.

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## Abstract

The present study examined the effects of BIOCERAMIC on psychological stress-conditioned elevated heart rate, blood pressure and oxidative stress-suppressed cardiac contractility using in vivo and in vitro animal models. We investigated the effects of BIOCERAMIC on the in vivo cardiovascular hemodynamic parameters of rats by monitoring their heart rates, systolic blood pressure, mean blood pressure and diastolic blood pressure. Thereafter, we assayed its effects on the heart rate in an isolated frog heart with and without adrenaline stimulation, and on cardiac contractility under oxidative stress. BIOCERAMIC caused significant decreases in heart rates and systolic and mean blood pressure in the stress-conditioned heart rate rat models ($P < 0.05$), as well as in the experimental models of an isolated frog heart with and without adrenaline stimulation ($P < 0.05$), and normalized cardiac contractility under oxidative stress ($P < 0.05$). BIOCERAMIC may, therefore, normalize the effects of psychological stress and oxidative stress conditions.

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