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Study on the apoptosis/autophagy of cardiomyocytes induced by Cinobufagin

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Venerum bufonis is a very promising Chinese herbal medicine, its pharmacological effects are clear, but because of its complex composition, mechanism of pharmacological effect is diverse, the main active ingredient of toad base with toxicity, so the clinical use of relatively safe range become smaller. In this study, the primary cultured cardiomyocytes were extracted to establish an *in vitro* experimental model to observe whether, Cinobufagin is toxic to primary cardiomyocytes and to investigate the toxic effects of Cinobufagin on the heart and its related mechanisms from the perspective of autophagy and apoptosis. The survival rate of isolated primary cardiomyocytes was about 70%-85%, After 72 h, the pulsatility of clustered cells was accordance, with 50-110/min pulsation. DAPI staining could observe the nuclear fragmentation of the cells treated with toad toxin above the concentration of 15 μ M and the formation of apoptotic bodies. The detection of mitochondrial membrane potential showed that the red orange fluorescence of the cardiac myocytes, in the Cinobufagin treated group was significantly higher than that in the blank control group. The result of AO and MDC staining indicated that Cinobufagin could induce the increase of autophagic vacuoles and autolysosome production in primary cardiac myocytes. The toxicity of Cinobufagin on primary myocardial cells is concentration dependent and large concentration can reduce cell viability and inhibit cell proliferation. Cinobufagin could induce apoptosis of primary cardiomyocytes through mitochondrial pathway and induce autophagy in cardiomyocytes, which is one of the causes of myocardial damage. The Cinobufagin *in vitro* shows potential cardiac toxicity.

Biography

Wenfeng Guo has completed his PhD from Heilongjiang University of Chinese Medicine and Postdoctoral studies from Guangzhou University of Chinese Medicine. He has been doing research on pharmacology and toxicology of Chinese medicine for about 15 years.

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