

6th Global Summit on

Toxicology & Applied Pharmacology

October 17-19, 2016 Houston, USA

Cytotoxicity of calcium rectorite micro/nanoparticles before and after organic modification

Xue Zhou

Huazhong University of Science and Technology, China

Organically modified rectorite (OREC) micro/nanoparticles can be synthesized by organic modification from calcium rectorite (Ca^{2+} -REC or REC), a common form of rectorite in nature. Although REC and OREC have potential applications in food packing and drug delivery, their cytotoxicity is not clear. In the present study, we investigated and compared the cytotoxicity of REC and OREC micro/nanoparticles in Chang liver and HepG2 cells. The interlayer spacing of OREC was enlarged after organic modification. REC and OREC could be taken up by Chang liver cells after treatment. REC and OREC induced cytotoxicity in Chang liver and HepG2 cells at almost all doses (1, 2.5, 5, 7.5, and 10 $\mu\text{g}/\text{mL}$) after 6, 24, and 48 h of treatment ($P < 0.05$ or $P < 0.01$). OREC was more cytotoxic than REC. However, there was no difference in the cytotoxicity of REC and OREC between the two cell lines. After treatment with REC or OREC at 7.5 and 10 $\mu\text{g}/\text{mL}$ for 24 h, the apoptotic and necrotic percentages of Chang liver cells were increased ($P < 0.05$ or $P < 0.01$). The levels of apoptosis-related proteins Bax, Bcl-2, and pro-caspase-3 were all decreased in Chang liver cells after 24h of exposure to REC or OREC at 5, 7.5 and 10 $\mu\text{g}/\text{mL}$. There was no change in Bax/Bcl-2 ratio after treatment, indicating that REC or OREC-induced apoptosis was not associated with Bax-related mitochondria-mediated apoptotic pathway. Our results suggested that OREC was more cytotoxic than REC, but the underlying mechanisms need further investigation.

Biography

Xue Zhou received her BS degree in Environmental Sciences from Wuhan University in 2003 and obtained her PhD degree in Environmental Health Sciences from New York University in 2010. She is currently Associate Professor at School of Public Health, Huazhong University of Science and Technology. She has more than 20 publications in reputed journals.

xue.zhou@hust.edu.cn

Notes: