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Sodium Hydrosulfide Attenuates Cisplatin-Induced Cell Death in Human Bone Marrow-Derived Mesenchymal Stem Cells

Gang Huang[a1], Hai-hua Guo [a,b1], , Jian-qiang Feng [c], Bi-cheng Yong [a], Zhong-xin Dong[a],Jing-nan Shen[a*].

[a] Department of Orthopedic-Oncology, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou 510080, P.R China; [b] Department of Orthopedic Medicine, The University of Hong Kong-Shenzhen Hospital, Shenzhen 518053, P.R China; c Department of Physiology, Zhongshan School of Medicine, Sun Yat-sen University, Guangzhou 510080, P.R China.

* Corresponding author: Dr. Jing-nan Shen M.D.

Mailing address: Department of Orthopedic-Oncology, The First Affiliated Hospital, Sun Yat-sen University, Guangzhou 510080, P.R China,

E-mail: shenjingnan@21cn.com.

Abstract

This study was to explore a mechanism by which hydrogen sulfide (H_2S) may protect human bone marrow-derived mesenchymal stem cells (hBM-MSCs) against cisplatin-induced apoptosis. hBM-MSCs were incubated with cisplatin, sodium hydrosulfide (NaHS) or U0126 (a specific MEK1/2 inhibitor). Cell viability and the expression of phosphorylated and unphosphorylated ERK1/2 were examined in the treated cells, respectively. A decrease in hBM-MSC viability was seen with increasing doses of cisplatin as well as increasing time of cisplatin exposure. Treating cells with NaHS prior to cisplatin resulted in an increase in hBM-MSC survival and in the p-ERK1/2 expression level, suggesting that the increased survival was related to the expression level of the ERK1/2 protein. Treating cells with U0126 (a highly selective inhibitor for MEK1/2) not only reversed the effects of NaHS on the activation of ERK1/2 but antagonized the protective effect of NaHS on cisplatin-induced motality of hBM-MSCs, su

ggesting that this agent influenced the cell's response to NaHS through its effect on the ERK1/2 pathway. These findings indicate that NaHS protects hBM-MSCs against cisplatin-induced cell death through activation of the ERK1/2 pathway.