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The effect of long term exposure of H₂S gas on anti-inflammatory action

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Statement of the Problem: Hydrogen sulfide (H₂S) is well known gas that can endogenously produce in human body and have diverse impact on human health. However, the exogenous H₂S is present in air and water, especially the sulfur spring in various concentrations. The long term exposure of exogenous H₂S and its effect on inflammation control is not well studied. In our study we will examine the effect of H₂S- emitted from sulfur spring and its correlation to anti-inflammatory response.

Methodology & Theoretical Orientation: Whole blood samples were collected from 100 individuals (exposed group) who lived permanently nearby El-HAMA springs for the last 10 years. Another 100 sample (control group) will be collected from Irbid area for analysis. Blood samples will be taken to measure inflammatory markers, H₂S and NO concentration, pro-inflammatory cytokines including tumor necrosis factor α (TNF- α), interleukin IL-1 β , interleukin IL-6, and interleukin IL-8).

Conclusion & Significance: This study would provide us with novel insight if cross-talk does in fact occur between long term H₂S exposure and the anti inflammatory status and the development/or prevention of inflammatory diseases. Meanwhile we are conducting this research and results still in progress.

Recent Publications

1. Katalin Módis, YoungJun Ju, Akbar Ahmad, Ashley A Untereiner, Zaid Altaany, Lingyun Wu, Csaba Szabo, Rui Wang. (2017) S-Sulfhydration of ATP synthase by hydrogen sulfide stimulates mitochondrial bioenergetics. *Pharmacological research*. 113, 116-124.
2. Zaid Altaany, Guangdong Yang and Rui Wang. (2013) Crosstalk between hydrogen sulfide and nitric oxide in endothelial cells. *J Cell Mol Med.*, (7):879-88.
3. Zaid Altaany, YoungJun Ju Guangdong Yang and Rui Wang. (2014) The coordination of S- sulfhydration, S- nitrosylation and phosphorylation of endothelial nitric oxide synthase by hydrogen sulfide. *Science Signaling*, 7, (342): ra87.
4. Kexin Zhao, YoungJun Ju, Li S, Zaid Altaany, Rui Wang, Guangdong Yang. (2014) Mediation of MEK1 S-sulfhydration and PARP-1 activation in H₂S-protected DNA damage repair. *EMBO report*. 2014, 15(7):792-800.
5. Zaid Altaany, Francesco Moccia, Luca Munaron, Daniele Mancardi and Rui Wang. (2014) Hydrogen sulfide and endothelial dysfunction: relationship with nitric oxide. *Current Medicinal Chemistry*, 21(32):3646-61.
6. Andreas Papapetropoulos, Anastasia Pyriochou, Zaid Altaany, Guangdong Yang, Antonia Marazioti, Zongmin Zhou, Mark G. Jeschke, Ludwik K. Branski, David N. Herndon, Rui Wang and Csaba Szabó (2009) Hydrogen sulfide is an endogenous stimulator of angiogenesis. *PNAS*. 06(51): 21972-7.

Biography

Zaid Altaany has completed his PhD in 2013 from Canada. After his PhD he pursued his postdoctoral training in the Department of Biochemistry at Schulich School of Medicine & Dentistry, Western University, Canada. After completion of his postdoctoral training he was appointed as an Assistant professor in the Department of Medical Laboratory Sciences at Al Balqa University for one year. He was then appointed in 2016 as an Assistant Professor in the Department of Medical Sciences at the Faculty of Medicine at Yarmouk University in Jordan until now. His interests are focused on gasotransmitters, including hydrogen sulfide and nitric oxide and their impact on human health and cell signaling.

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