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Carbon monoxide: A poison to microbes

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Inflammation and immunity result in a wide range of disease processes, including chronic obstructive pulmonary disease, ischemia-reperfusion injury, atherosclerosis, vascular thrombosis and sepsis. Heme oxygenase-1 (HO-1) is a key enzyme that is indispensable for the temporal and spatial regulation of host response and, together with its essential metabolite carbon monoxide (CO), is crucial for maintaining homeostasis, inhibition of inflammation and the preservation of function and life. Of the numerous physiologic effects observed with CO, in the last 5 years, it has become apparent that CO has been ascribed an additional novel, yet innate role as a “bactericidal agent”. Its role in the maintenance of homeostasis remains intact, however, the designation necessitates the paradoxical induction of the inflammatory response and binding to hemoproteins in order to restore physiological balance and sustain life. In this presentation we will review and discuss reports that have propelled and challenged the paradoxical use of CO, once viewed as a toxic molecule, now as a host defense molecule agent against pathogens.

Biography

B Y Chin received her degrees in Physiology and Toxicological Sciences from the Department of Environmental Health Sciences at Johns Hopkins University, Baltimore, Maryland. She continued her research at the Department of Surgery at Beth Israel Deaconess Medical Center in Boston, Massachusetts after completing her post-doctoral fellowship at Pacific Northwest National Laboratory, US Department of Energy in Richland, Washington. She also had a joint Faculty appointment at Harvard Medical School since 2006. She has published over 32 peer review journal articles and is an active member on 3 editorial boards. Currently, she is a Professor of Medicine at the Faculty of Medicine & Health at the International Medical University.

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