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Korean red ginseng prevents pneumococcal sepsis *in vivo* by potentiating cell survival and diminishing inflammation

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More than 50% of sepsis cases are caused by *Streptococcus pneumoniae* (pneumococcus), and hospital mortality related to sepsis comprises 52% of all hospital deaths. Therefore, sepsis is a medical emergency, and any treatment against the agent that produces it, is welcome. Here, the protective effect of Korean red ginseng (KRG) extract against pneumococcal infection and sepsis was elucidated. KRG-pre-treated mice (100mg/kg of KRG) had significantly higher survival rates and body weights than those of the non-treated controls; KRG-pre-treated mice had lower bacterial number and morbidity than those of the non-treated controls. 100mg/kg of KRG administration decreased cytokine levels including TNF- α and IL-1 β , nitric oxide level, and neutrophil infiltration 48 h post-infection, *in vivo*. In pneumococcal infection, KRG pre-treatment down-regulated TLR 4 and TNF- α expressions in RAW 264.7 macrophage cells and increased cell survival by activating PI3K/AKT signaling. Taken together, 100mg/kg of KRG appeared to protect host cells from lethal pneumococcal sepsis by inhibiting inflammation as well as by enhancing bacterial clearance thereby reinforcing cell survival against pneumococcal infection.

Biography

Dong-Kwon Rhee has completed his PhD at University of Illinois at Chicago in 1988 and Postdoctoral studies from Yale University School of Medicine. He was the Director of World Class University at Sungkyunkwan University (SKKU) one of the fastest rising universities in the World and School of Pharmacy. He has published 159 papers in reputed journals and is serving as a President of Korean Society of Ginseng.

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