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Berberine ameliorated inflammatory responses via inhibition of NF- κ B signaling in lipopolysaccharide-stimulated mouse inner medullary collecting duct-3 cells

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Inner Medullary Collecting Duct (IMCD) cells mainly play important roles in water and sodium homeostasis. Not only the maintaining homeostasis, but also the protections from local (kidney) or systemic inflammation are important functions of IMCD cells. However, although IMCD cells are active player in kidney/or systemic inflammation, inflammation on IMCD barely has been examined. Berberine (BBR) is well-known for variety effects of biochemical and pharmacological field. Nevertheless, the anti-inflammatory effects of BBR on IMCD cells have not been examined. Therefore, in the present study, we have investigated the anti-inflammatory activities of BBR on mouse IMCD-3 (mIMCD-3) cells during lipopolysaccharide (LPS)-induced inflammatory responses. In accordance with previous report, pro-inflammatory molecules such as inducible Nitric Oxide Synthase (iNOS) and cyclooxygenase-2 (COX-2) and pro-inflammatory cytokines such as Tumor Necrosis Factor-alpha (TNF- α), Interleukin-1 beta (IL-1 β) and IL-6 are released in LPS-exposed mIMCD-3 cells. However, these pro-inflammatory productions are significantly inhibited by BBR treatment. In addition, BBR inhibited the translocation of nuclear factor (NF)- κ B p65 to nucleus and degradation of inhibitory κ -B α (I κ -B α) on LPS-exposed mIMCD-3 cells. In conclusion, these results suggest that BBR could inhibit inflammatory responses via deactivation of NF- κ B and ultimately contribute to amelioration of kidney injury during systemic inflammation.

Biography

Sung-Joo Park is a Professor of Wonkwang University in South Korea and majored in Korean Traditional Medicines and Immunology. He has many focuses on inflammatory diseases such as pancreatitis, sepsis, obesity and asthma.

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