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Anti-inflammatory activity of *Sparassis crispa* by suppressing TLR-mediated NF- κ B and MAPK signaling pathways in LPS-induced RAW264.7 cells

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Chronic inflammation is intimately related with the pathogenesis of various diseases including atherosclerosis, obesity, asthma, arthritis, cancer, and autoimmune diseases. Therefore, targeting the dysregulated inflammatory processes is regarded to be an effective therapeutic approach of these diseases. Cauliflower mushroom *Sparassis crispa* is known to possess various biological activities such as immunopotential, anti-diabetes, anti-cancer, anti-oxidant and anti-inflammatory effects. Although anti-inflammatory effects of *Sparassis crispa* have been reported in several scientific studies, the underlying mechanisms of such effects are not yet fully understood. Recently, we selectively isolated the health functional fraction from ethanol extract of *Sparassis crispa* by using water-organic solvent mixtures and HPLC. In this study, we identified the anti-inflammatory activity and action mechanism of the fraction isolated from *Sparassis crispa* (SCF4) in LPS-stimulated RAW264.7 murine macrophage cells. Our results showed that SCF4 significantly suppressed LPS-induced production of pro-inflammatory mediators, NO and PGE2 and pro-inflammatory cytokines, TNF- α , IL-6 and IL-1 β without cytotoxicity, in addition, SCF4 down-regulated not only the expression of iNOS and COX-2, but also the activation of NF- κ B and MAPK pathways stimulated by LPS. SCF4 also blocked the nuclear translocation of NF- κ B via reduction of I κ B α degradation. Furthermore, SCF4 inhibited the TLR-mediated phosphorylation of TAK1, an important upstream factor of NF- κ B and MAPK signaling. These findings demonstrate the correlation between the anti-inflammatory activity of SCF4 and TLR-mediated NF- κ B and MAPK signaling pathways, suggesting that the organic solvent extract of *Sparassis crispa* could be applied as a promising natural product for the prevention and treatment of inflammatory diseases.

Biography

Jang Mi Han has obtained her Master's degree from Sun Moon University, South Korea. She is the Doctor at Department of Life Science and Biochemical Engineer of Sun Moon University. She has published 4 papers in SCI journals.

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