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Lobaric Acid Inhibits LPS-Induced Inflammation In RAW 264.7 Cells and Mouse Peritoneal Macrophages via Suppressing of MAPK/NF-Kb Pathway and NLRP Inflammasome Activation

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Lobaric acid, a constituent of the lichen *Stereocaulon alpinum*, has been shown to possess multiple biological activities, including anti-bacterial activity and anti-oxidant activity. We validated that lobaric acid has inhibitory effect on inflammatory response. Among various inflammasome complexes, the NLRP3 inflammasome has been the most widely characterized and activated caspase-1 by NLRP3 triggers maturation and secretion of the pro-inflammatory cytokines IL-1 β and IL-18. In this study, we investigate the effect of lobaric acid and its mechanism on LPS-activated inflammatory response in macrophages. RAW 264.7 cells were pretreated with various concentrations of lobaric acid (0.1-10 μ g/mL) before stimulation of LPS. Using the Griess colorimetric method or ELISA, the data showed that the production of Nitric Oxide (NO) and PGE₂ was markedly inhibited by lobaric acid. Immunoblot analysis showed that lobaric acid significantly suppressed the expression of iNOS and COX-2 in concentration-dependent manners. Additionally, lobaric acid significantly inhibited LPS-induced pro-inflammatory cytokines IL-1 β and IL-18. Moreover, Immunoblot analysis revealed that lobaric acid suppressed the NLRP3 inflammasome activation in LPS/ATP-stimulated cells. Collectively, these data suggest that lobaric acid could inhibit inflammatory response via suppression of NLRP3 inflammasome activation in macrophages. These results also provide lobaric acid could be a novel therapeutic candidate to modulate inflammatory response.

Biography:

I majored in life sciences as a bachelor's degree and majored in school of pharmacy as a master's degree in south korea. I am now studying in Cell Immunology as Ph.D. in school of Pharmacy, Sungkyunkwan University. I participated in a variety of academic societies including Immunology and Experimental Biology. I have been very helpful in researching inflammation and obesity through these various conferences. I am currently conducting research on inflammatory diseases, obesity and diabetes, and I have been submitting papers related to these study.