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Jian-Jhe Hong et.al., J Nutr Food Sci 2018, Volume 8
DOI: 10.4172/2155-9600-C2-057

20th World Congress on
NUTRITION & FOOD SCIENCES
May 14-16, 2018 Tokyo, Japan

Andrographolide inhibits monosodium urate-induced IL-1β release in bone marrow-derived macrophage

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Gout is the leading prevalent inflammatory arthropathy and it etiologies include disruption of uric acid metabolism, poor life style, and incorrect eating habits which result in the elevated blood uric acid levels. When blood uric acid concentration exceeds the normal level, it supersaturates and crystalizes which ends up monosodium urate crystal (MSU) deposit in joints, cartilage, synovial fluid, or soft tissue. The urate deposition in the articular cavity attracts immune cells which release inflammatory cytokines leading to the development of pain and swelling. Both pain and swelling in the joint is typical syndrome of gout. MSU is known to be one of the activators of the NLR family pyrin domain containing 3 (NLRP3) inflammasome. After activation, NLRP3 releases IL-1β which is involved in the progression of many inflammatory diseases. *Andrographis paniculata* (Burm.F.) Nees, the traditional herb used to treat fever, sore throat and snake bites, has anti-liver toxicity, anti-virus, anti-oxidation and anti-inflammatory effects. Andrographolide (AND) is the most abundant diterpenoid in the leaves of *A. paniculata* and has been shown to be a potent anti-inflammatory agent. Results of this study showed that AND inhibit LPS/MSU-induced IL-1β release in bone marrow-derived macrophages. In addition, oral administration of AND attenuated MSU-induced macrophage infiltration in mouse joints. Thus far, we provided evidence that AND inhibited inflammasome priming stage such as protein expression of NLPR3 and pro-IL-1β. In the future, we will study the mechanisms involved in attenuation of LPS-induced priming stage by AND, and its possible role in MSU-induced activation stage.

Biography

Jian-Jhe Hong has completed his Bachelor's degree from the Department of Nutrition of China Medical University in Taiwan. Currently he is pursuing his graduation in the Department of Nutrition of China Medical University in Taiwan.

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