

## Xanthone attenuates mast cell-mediated allergic inflammation

AYE-AYE<sup>1,2</sup>, Yong-Deok Jeon<sup>1</sup>, Young-Jae Song<sup>1</sup>, Jong-Sik Jin<sup>1</sup>

<sup>1</sup>Department of Oriental Medicine Resource, Chonbuk National University, 79 Gobongro, Iksan, Jeollabuk-do, Republic of Korea

<sup>2</sup> Department of Lifestyle Medicine, Chonbuk National University, 79 Gobongro, Iksan, Jeollabuk-do, Republic of Korea

### ABSTRACT

Xanthone is a kind of polyphenolic compounds that contain a distinctive chemical structure with a tricyclic aromatic ring found in a few higher plant families e.g. gentian root. This compound had a variety of biological activity, for instance antioxidant, antibacterial, anti-inflammatory, and anticancer effects. However, the effect of xanthone on mast cell-mediated allergic inflammation and its associated mechanism have not been elucidated. Therefore, the aim of this study was to elucidate the anti-allergic inflammatory effects and the underlying molecular mechanism of xanthone in PMACI-stimulated human mast cells-1 (HMC-1). In this result, xanthone treatment decreased the production of histamine, pro-inflammatory cytokines such as tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ), IL-6, and IL-8 and expressions of TSLP in PMACI-stimulated HMC-cells. In addition, xanthone significantly suppressed the phosphorylation of MAPKs and the activation of NF- $\kappa$  B signal pathway in activated mast cells. Furthermore, xanthone inhibited the activation of caspase-1, an IL-1  $\beta$  converting enzyme, in PMACI-stimulated HMC-1 cells. These findings provide evidence that xanthone could be a potential therapeutic agent for allergy-related inflammatory disorders.

**Keywords:** Xanthone; human mast cells; pro-inflammatory mediators

This research was supported by the Basic Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Science, ICT and Future Planning (Grant No. NRF-2017R1A6A3A11032448)