

BETULINIC ACID FROM VIETNAMESE *ADENOSMA CAERULEUM* R.BR. INHIBITS ZYMOSAN-INDUCED INFLAMMATION THROUGH NLRP3 INFLAMMASOMES

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(Received 28 December 2025) (Accepted 27 April 2026)

ABSTRACT

The effectiveness of betulinic acid in anti-inflammation has been demonstrated. However, the role of betulinic acid in inhibition of zymosan-stimulated inflammation in macrophages remains unclear. Therefore, this study aimed to investigate the effects of betulinic acid from *Adenosma caeruleum* R.Br. on zymosan-induced inflammatory signaling in macrophages. The inflammatory signals were stimulated by zymosan on macrophages, such as tumor necrosis factor alpha, interleukin-6, interleukin-1 β , and reactive oxygen species, which were strongly inhibited at a concentration of 40 $\mu\text{g mL}^{-1}$ ($p < 0.001$) of betulinic acid. Importantly, betulinic acid inhibited caspase-1 and nucleotide-binding domain leucine-rich repeat and pyrin domain containing receptor 3 inflammasomes in Raw 264.7. This study suggests that betulinic acid from *A. caeruleum* R. Br. can be used as a promising agent against excessive inflammation by inhibiting the signaling pathways of nucleotide-binding domain leucine-rich repeat and pyrin domain containing receptor 3 inflammasomes.

Keywords: *Adenosma caeruleum* R. Br., betulinic acid, 3 (NLRP3) inflammasome, and apoptosis-associated caspase-1, NLRP3 inflammasome, zymosan, particle (ASC)¹¹.