
PLENARY PRESENTATIONS

**UVAOL ATTENUATES MYOCARDIAL INFARCTION-INDUCED CARDIAC
INJURY BY SUPPRESSING INFLAMMATION AND NLRP3
INFLAMMASOME-MEDIATED PYROPTOSIS**

G. Zheng, Y. Chen, C. Du, C. Guo, L. Chen, D. Yan

*Wuhan University of Science and Technology, 2 Huangjiahu West Road, Wuhan 430065,
PR China*

Uvaol, a pentacyclic triterpenoid and major bioactive constituent of *Callicarpa pedunculata*, possesses notable anti-inflammatory and antioxidant activities. However, its cardioprotective potential against myocardial infarction-induced cardiac injury remains unclear. The study aimed to determine whether uvaol alleviates MI-induced myocardial injury by reducing inflammation and pyroptosis through modulation the NLRP3 Inflammasome signaling pathway. In our study, myocardial infarction was induced by permanent ligation of the left anterior descending coronary artery, while oxygen-glucose deprivation-treated H9c2 cells were used to mimic ischemic injury in vitro. Lipopolysaccharide-stimulated RAW264.7 macrophages were used to assess the anti-inflammatory activity of uvaol. Network pharmacology, molecular docking, and molecular dynamics simulations were performed to identify and validate potential targets. The cardioprotective effects of uvaol were evaluated by echocardiography, histological and immunohistochemical staining, Western blotting, ELISA, and RT-qPCR.

Uvaol administration at doses of 25 and 50 mg/kg significantly improved cardiac function, reduced infarct size, attenuated inflammatory cell infiltration, and inhibited cardiomyocyte pyroptosis after myocardial infarction. Mechanistically, uvaol suppressed OGD-induced inflammation and pyroptosis by inhibiting NLRP3 inflammasome activation in H9c2 cells. Molecular docking and molecular dynamics simulations further indicated that uvaol exhibited strong binding affinity and stable interactions with key proteins involved in NLRP3 inflammasome-mediated pyroptosis.

These results suggest that uvaol protects against myocardial infarction-induced cardiac injury by suppressing inflammation and NLRP3 inflammasome-mediated pyroptosis. Uvaol may represent a promising natural therapeutic candidate for the treatment of post-myocardial infarction cardiac injury.