

Effects of CNB-001, a synthetic curcumin derivative, on thrombin-induced phosphorylation of MAP kinases in primary cultured rat microglia

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We have recently found that CNB-001, a synthetic curcumin derivative, suppresses thrombin-induced nitric oxide (NO) production in cultured microglia, demonstrating that it exerts anti-neuroinflammatory effects by regulating microglial activation. In the present study, we investigated the molecular mechanisms underlying the suppressive effects of CNB-001 on thrombin-induced inflammatory responses. Western blotting analysis demonstrated that thrombin (10 U/mL) induced rapid phosphorylation of extracellular signal-regulated kinase (ERK), c-Jun N-terminal kinase (JNK), and p38 mitogen-activated protein kinase (MAPK). CNB-001 significantly suppressed the thrombin-induced phosphorylation of ERK and p38 MAPK, but not JNK. In addition, the suppressive effect of CNB-001 on NO production was mimicked by blockage of the ERK and p38 MAPK signaling pathways with U0126 and SB203580. These results suggest that CNB-001 suppresses thrombin-induced microglial activation through inhibition of ERK and p38 MAPK pathways.