Cardamonin inhibits nitric oxide production modulated through NMDA receptor in LPS-induced SH-SY5Y cell in vitro model

ABSTRACT

Background: Cardamonin is a naturally occurring chalcone from the Alpinia species. It is known to possess antioxidant and anti-inflammatory properties. Our previous studies have shown that cardamonin has antihyperalgesic and antiallodynic effects on CCI-induced neuropathic pain in mice. Although the evidence of the association between cardamonin and neuropathic pain has been reported in animal studies, specific targets using in vitro models are still lacking. Objectives/Methods: This study aims to investigate the effect of cardamonin on nitric oxide production using the LPS-induced neuropathic pain-like SH-SY5Y in vitro model through NMDA receptor expression. Results: Cardamonin administration in differentiated SH-SY5Y cells significantly reduced nitric oxide production assessed using Griess reagent. Western blot analysis demonstrated a significant reduction in GluN2B receptor expression in the cardamonin treated SH-SY5Y cells compared to the vehicle treated group. Conclusions: These data suggest that cardamonin reduces nitric oxide production modulated through NMDA GluN2B receptor subunit. Our results provides preliminary data to support the in vivo studies using cardamonin and may contribute to further understanding the mechanisms of action of cardamonin.

Keyword: Cardamonin; NMDA receptor; SIISY-5Y cells; Neuropathic pain