Farrerol

Farrerol, an important bioactive constituent of rhododendron, exhibits broad activities such as anti-oxidative and anti-inflammatory effects. Recent studies showed that farrerol possesses neuroprotective activity, however, the mechanism has not been reported. The aim of the present study was to investigate the protective effect of farrerol on β-amyloid (Aβ)-induced mouse microglial BV-2 cells and the underlying mechanism. BV-2 cells were pretreated with farrerol for 1 h and then subjected to Aβ. MTT assay was performed to measure the mitochondrial metabolic activity in BV-2 cells. The production of reactive oxygen species (ROS) and malondialdehyde (MDA) and superoxide dismutase (SOD) activity were detected to reflect oxidative stress status. The secretion and mRNA levels of interleukin (IL)-1β (IL-1β), IL-6 and tumor necrosis factor-α (TNF-α) were measured by ELISA and qRT-PCR. The expressions of NF-E2-related factor (Nrf2), heme oxygenase-1 (HO-1), NAD (P) H: quinone oxidoreductase 1 (NQO1), and Kelch-like ECH-associated protein 1 (Keap1) were measured by western blot. Our results showed that farrerol improved mitochondrial metabolic activity in Aβ-induced BV-2 cells. Aβ induced the production of ROS and MDA, and inhibited the SOD activity and the expression of SOD1 and SOD2 mRNA, while the effects were attenuated by farrerol. Farrerol also inhibited the induction effect of Aβ on IL-6, IL-1β, and TNF-α. In addition, farrerol enhanced the activation of Nrf2/Keap1 pathway in Aβ-induced BV-2 cells. Knockdown of Nrf2 by small interfere RNA (siRNA) targeting Nrf2 (si-Nrf2) abolished the protective effect of farrerol on Aβ-induced BV-2 cells. In conclusion, farrerol attenuated Aβ-induced oxidative stress and inflammation in BV-2 cells through enhancing the activation of Nrf2/Keap1 pathway. The findings indicated that farrerol could be considered as a therapeutic approach for the treatment of Alzheimer's disease (AD) [1)]

1)
Cui B, Zhang S, Wang Y, Guo Y. Farrerol attenuates β-amyloid-induced oxidative stress and inflammation through Nrf2/Keap1 pathway in a microglia cell line. Biomed Pharmacother. 2018 Nov 2;109:112-119. doi: 10.1016/j.biopha.2018.10.053. [Epub ahead of print] PubMed PMID: 30396067.