Sinularin, a marine nature compound obtained from indigenous soft coral *Sinularia querciformi*, attenuates nociceptive responses and activity of the spinal glial cells in carrageenan injected rats

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The marine-derived compounds are believed to lead to the development of a new range of drugs of great potential, especially to anti-inflammatory drugs. By using an usual *in vitro* anti-inflammatory assay system, we found that sinularin, a natural compound isolated from formosan marine soft coral *Sinularia querciformis*, significantly inhibits upregulation of proinflammatory proteins, namely, inducible nitric oxide synthase (iNOS) and cyclooxygenase-2 (COX-2), in lipopolysaccharide (LPS)-stimulated murine macrophage RAW 264.7 cells. In the present study, we focused to determine whether sinularin has *in vivo* antinociceptive and anti-inflammatory effects on carrageenan-induced rat paw edema and the hyperalgesia model using the Hargreave's test, the von Frey monofilament test, incapacitance test, paw edema assay, and histological examination. Furthermore, we also explored the possible cellular mechanisms of sinularin on carrageenan-induced inflammatory responses at the local and spinal levels by immunohistochemistry. In the present study, we had found that subcutaneous administration of sinularin significantly inhibits carrageenan-evoked nociceptive behaviors as well as thermal hyperalgesia, mechanical allodynia, and hindpaw weight-bearing deficits. Immunohistochemical observations had revealed that sinularin also significantly inhibit the carrageenan-induced the microglia and astrocytes activation, and up-regulation of inflammatory mediators in the dorsal horn of the lumbar spinal cord. Collectively, our present findings indicate that further exploration of the effects of sinularin, a potential anti-inflammatory agent, on other neuroinflammation-induced disease is promising and warranted.