

Resolvin E1 Inhibits Neuropathic Pain and Spinal Cord Microglial Activation Following Peripheral Nerve Injury

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Abstract

Accumulating evidence indicates that activation of spinal cord microglia plays an important role in the genesis of neuropathic pain. Resolvin E1 (E1) is derived from omega-3 polyunsaturated fatty acid and exhibits potent anti-inflammatory, pro-resolution, and anti-nociceptive effects. We further examined whether RvE1 could reduce neuropathic pain and modulate spinal cord microglial activation. Intrathecal pre-treatment of RvE1 (100 ng) daily for 3 days partially prevented the development of nerve injury-induced mechanical allodynia

and up-regulation of IBA-1 (microglial marker) and TNF- α in the spinal cord dorsal horn. Furthermore, intrathecal post-treatment of RvE1 (100 ng), 3 weeks after nerve injury, transiently reduced mechanical allodynia and heat hyperalgesia. Finally, RvE1 blocked lipopolysaccharide-induced microgliosis and TNF- α release in primary microglial cultures. Our data suggest that RvE1 may attenuate neuropathic pain via inhibiting microglial signaling. Targeting the anti-inflammatory and pro-resolution lipid mediators may offer new options for preventing and treating neuropathic pain.



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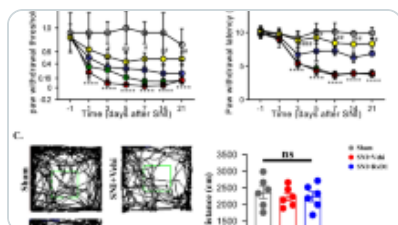
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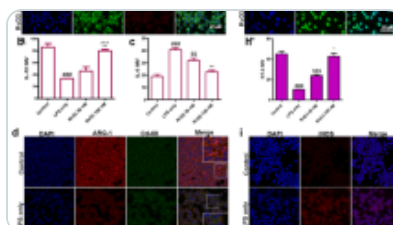
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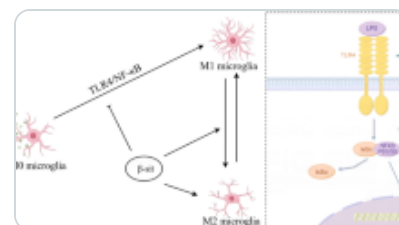
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Conflict of interest statement

The authors have no financial interest in this study.

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