

Mirror-image pain

Inflammation or **trauma** occurring on one side of the body can cause pathological pain on the contralateral noninjured side in a phenomenon called mirror-image pain (MIP). Although some potential mechanisms involved in MIP have been reported, including those involving the **immune system** and **glial cells** as well as neural mechanisms, the molecular mechanisms are not well understood. In this study, we aimed to understand the molecular mechanisms in MIP using quantitative proteomics and whole-cell patch clamp recordings. Behavioral test results showed that complete Freund's adjuvant could induce MIP in the mice. The results of isobaric tags for relative and absolute quantification (iTRAQ) quantitative proteomics showed that 108 proteins were dysregulated, and these proteins may represent potential targets. Furthermore, bioinformatics analysis was applied to explore the potential molecular mechanisms during MIP after complete Freund's adjuvant (CFA) treatment. Parallel reaction monitoring (PRM) results showed that PKC δ and seven other dysregulated proteins were related to MIP after CFA treatment. Patch clamp recording results showed that CFA treatment could increase intrinsic excitability and spontaneous firing in spinal cord neurons during MIP. In summary, we found that CFA could induce MIP. The results of proteomic research on the spinal cord after CFA treatment could provide new insight into the molecular mechanisms of MIP. Moreover, the neuronal activity of spinal cord neurons was upregulated during MIP after CFA treatment. In summary, the results of the spinal cord proteomic profile provide a potential molecular mechanism for understanding MIP ¹⁾.

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Ma Q, Chen X, Sun J, Wang L, Jiang W, Zhang X, Chen S. Complete Freund's adjuvant-induced protein dysregulation correlated with mirror image pain as assessed by quantitative proteomics of the mouse spinal cord. *Biochem Biophys Res Commun*. 2021 Nov 12;589:23-28. doi: 10.1016/j.bbrc.2021.11.032. Epub ahead of print. PMID: 34883286.

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