

Attenuation of TRPV1 Expression and Function in Mouse Inflammatory Pain Models Using Electroacupuncture

Wei-hsin Chen¹, Jason T.c. Tzen¹, Shuyi Wu², Yi-wen Lin²

¹Graduate Institute of Biotechnology, National Chung Hsing University, Taiwan, ²Graduate Institute of Acupuncture Science, China Medical University, Taiwan

Background & Aim :

Although pain is a major human affliction, our understanding of pain mechanisms is limited. TRPV1 (transient receptor potential vanilloid subtype 1) is crucial receptors involved in inflammatory pain but their roles in EA (electroacupuncture)-mediated analgesia are unknown. We want to explore the relation between TRPV1 and acupuncture.

Materials & Methods :

We injected mice with complete Freund's adjuvant to induce inflammatory pain and investigate the analgesic effect of EA using animal behavior tests, immunostaining, Western blotting, whole-cell recording technique.

Results :

The inflammatory pain model mice developed both mechanical and thermal hyperalgesia. Notably, EA at the ST36 acupoint reversed these phenomena, indicating its curative effect in inflammatory pain. The protein levels of TRPV1 in DRG (dorsal root ganglion) neurons was increased at day 7 after initiation of inflammatory pain and were attenuated by EA, as demonstrated by immunostaining and Western blot analysis. We verified DRG electrophysiological properties to confirm that ameliorated peripheral nerve hyperexcitation. Our results indicated that the AP (action potential) threshold, rise time, and fall time, and the percentage and amplitude of TRPV1 was altered by EA.

Conclusion :

Our results demonstrate a novel role for EA in regulating TRPV1 protein expression and neuronal excitation in mouse inflammatory pain models.

Keywords:

TRPV1, inflammatory pain, dorsal root ganglion, ST36, acupuncture

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