Iranian Biomedical Journal
Volume ۱۲, Issue ۳, ۲۰۰۸, Pages ۱۷۳-۱۷۸

A study of acute and chronic anti-nociceptive and anti-inflammatory effects of thiamine in mice

Moallem, S.A.[abc] , Hosseinzadeh, H.[ab], Farahi, S.[a]
[a] Dept. of Pharmacodynamy and Toxicology, School of Pharmacy, **Mashhad University** of **Medical Sciences**, **Mashhad**
[b] Pharmaceutical Research Center, Bu-Ali Research Institute, **Mashhad University** of **Medical Sciences**, **Mashhad**
[c] **Medical** Toxicology Center, **Mashhad University** of **Medical Sciences**, **Mashhad**, Iran

View references (۱۷)

Abstract

Background: Thiamine (VitB ۱) is a vitamin with various important physiological functions and postulated therapeutic effects. Its use as an analgesic in neuropathic pain has been undergoing in clinical settings. However, there has been little experimental investigation on this effect. In this study, anti-nociceptive and anti-inflammatory effects of thiamine were investigated in mice. Methods: Three doses of thiamine (۵۰, ۱۰۰ and ۱۲۵ mg/kg) were used by intraperitoneal injection in this study. Acute and chronic anti-nociceptive effects were examined using hot plate test alone and after sciatic nerve ligation, respectively. Imipramine (۴۰ mg/kg) was used as positive control. Anti-inflammatory effects of thiamine on acute and chronic inflammation were assessed using xylene-induced edema in ears and granuloma caused by compressed cotton implantation, respectively. Sodium diclofenac (۱۵ mg/kg) was used as positive control. Open field test was performed to differentiate the mice responses in the acute anti-nociceptive tests. Results: All three doses of thiamine showed significant analgesic effects in non-ligated mice and also in neuropathic pain in ligated animals. Increasing the dose of thiamine correlated with a more pronounced and sustained effect. Acute anti-inflammatory investigation showed that thiamine injected ۳۰ or ۶۰ minutes before xylene application reduced the weight of edematic ears. However, the effect of thiamine was less pronounced than diclofenac. Furthermore, when injected once daily for ۷ days, all doses of thiamine significantly reduced the weight of the cotton disks, showing suppression of granuloma formation. Conclusion: Taken together, it has been shown that thiamine possesses remarkable analgesic activities and also has significant anti-inflammatory effects, confirming its clinical use in controlling pain and less in inflammation.

Author keywords

Anti-inflammation; Anti-nociceptive; Thiamine

Indexed Keywords

EMTREE drug terms: diclofenac; imipramine; thiamine; xylene

EMTREE medical terms: analgesic activity; animal experiment; animal model; antiinflammatory activity; antinociception; article; controlled study; drug effect; granuloma; hot plate test; male; mouse; nerve ligation; neuropathic pain; nonhuman; open field test; sciatic nerve

MeSH: Analgesics; Animals; Anti-Inflammatory Agents; Edema; Locomotion; Male; Mice; Mice, Inbred BALB C; Sciatic Nerve; Thiamine; Xylenes
Medline is the source for the MeSH terms of this document.

Species Index: Animalia; Gossypium hirsutum; Mus

Chemicals and CAS Registry Numbers: diclofenac, ۱۵۳۰۷-۷۹-۶, ۱۵۳۰۷-۸۶-۵; imipramine, ۱۱۳-۵۲-۰, ۵۰-۴۹-۷; thiamine, ۵۹-۴۳-۸, ۶۷-۰۳-۸; xylene, ۱۳۳۰-۲۰-۷;Analgesics; Anti-Inflammatory Agents; Thiamine, ۵۹-۴۳-۸; Xylenes
Manufacturers:Drug manufacturer: Darou Pakhsh, Iran;Hakim, Iran;Sobhan, Iran.

ISSN: ۱۰۲۸۸۵۲X **CODEN:** IBJRA**Source Type:** Journal **Original language:** English
PubMed ID: ۱۸۷۶۲۸۲۱**Document Type:** Article