

# In-vitro assessment and pharmacodynamics of nimesulide incorporated Aloe vera transemulgel

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## Abstract

The aim of the investigation was to prepare nimesulide emulsion for incorporation in Aloe vera gel base to formulate 'nimesulide - Aloe vera transemulgel' (NAE) and to carryout in-vitro assessment and in-vivo anti-inflammatory studies of the product. Although the use of nimesulide is banned for oral administration, due to its potential for inducing hepatotoxicity and thrombocytopenia, the use of nimesulide for topical delivery is prominent in the treatment of many inflammatory conditions including rheumatoid arthritis. The drug loading capacity of transdermal gels is low for hydrophobic drugs such as nimesulide. Nimesulide can be effectively incorporated into emulgels (a combination of emulsion and gel). Aloe vera has a mild anti-inflammatory effect and in the present study Aloe vera gel was formulated and used as a gel base to prepare NAE. The emulgels thus prepared were evaluated for viscosity, pH, in-vitro permeation, stability and skin irritation test. In-vivo anti-inflammatory studies were performed using carrageenan induced hind paw edema method in Wistar rats. The results were compared with that of commercial nimesulide gel (CNG). From the in-vitro studies, effective permeation of nimesulide from NAE (53.04 %) was observed compared to CNG (44.72 %) at 30 min indicating better drug release from NAE. Topical application of the emulgel found no skin irritation. Stability studies proved the integrity of the formulation. The percentage of inhibition of edema was highest for the prepared NAE (67.4 % inhibition after 240 min) compared to CNG (59.6 %). From our results, it was concluded that the Aloe vera gel acts as an effective gel base to prepare nimesulide emulgel with high drug loading capacity (86.4 % drug content) compared to CNG (70.5 % drug content) with significant anti-inflammatory effect.

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## More Details

- **Title:** In-vitro assessment and pharmacodynamics of nimesulide incorporated Aloe vera transemulgel
- **Source:**
  - [PubMed](#)
- **Scholarly:** Yes
- **Peer Reviewed:** Yes
- **Publication Title:** Current drug discovery technologies

- **Alternate Publication Title:** Curr Drug Discov Technol
- **Date :** 06/2014
- **Place:** United Arab Emirates
- **Volume:** 11
- **Issue:** 2
- **Start Page:** 162
- **EISSN:** 1875-6220
- **Genre:** Journal Article
- **Subjects:**

Plant Preparations - therapeutic use, Sulfonamides - therapeutic use, Sulfonamides - chemistry, Plant Preparations - pharmacology, Plant Preparations - chemistry, Edema - chemically induced, Anti-Inflammatory Agents, Non-Steroidal - therapeutic use, Edema - drug therapy, Anti-Inflammatory Agents, Non-Steroidal - chemistry, Anti-Inflammatory Agents, Non-Steroidal - pharmacology, Skin - drug effects, Sulfonamides - pharmacology

- **Language:** English