



**INTERNATIONAL JOURNAL OF
PHARMACEUTICAL SCIENCES**
[ISSN: 0975-4725; CODEN(USA):IJPS00]
Journal Homepage: <https://www.ijpsjournal.com>



Review Article

Analgesic and Anaesthetic Effects of Clove: An Extensive Review

Tagad Akash¹, Sathe Yash², Ghode Rita³

Department Of Pharmacognasy, HSBPVT's GOI, Faculty Of Pharmacy, Kashti, Ahmednagar, Maharashtra

ARTICLE INFO

Received: 21 Jan 2024

Accepted: 24 Jan 2024

Published: 25 Jan 2024

Keywords:

Clove, Essential oil,
Analgesic, Anaesthetic.

Materials:

Clove, clove oil extract,
testing equipment.

DOI:

10.5281/zenodo.10569276

ABSTRACT

This review provides an in-depth analysis of the analgesic and anesthetic effects of clove, a spice derived from the flower buds of the *Syzygium aromaticum* tree 1. The active ingredient in clove oil, eugenol, has been identified as the primary compound responsible for these effects. The review covers the historical use of clove as a pain reliever and anaesthetic, the mechanisms of action of eugenol, and the clinical applications of clove oil in dentistry and traditional medicine. The review concludes with a discussion on future research directions in this field.

Objective

Results obtained from literature reviews and human studies have shown the analgesic effects of clove plant in toothache, and use of clove oil as painkiller.

INTRODUCTION

Clove is a spice that is derived from the flower buds of the clove tree. It is native to the Maluku Islands in Indonesia and is commonly used in cooking for its aromatic flavour. However, clove is also known for its medicinal properties, particularly its analgesic and anaesthetic effects.

It is used as common remedy for toothache and bad breath and as a spice in the southeastern kitchen.

Clove's medicinal effects are well noted and known and mentioned in Ayurveda as well.

Historical Use of Clove

The use of clove as a medicinal agent date back to ancient times. It was used by the Greeks, Romans, and Chinese for its therapeutic properties. The analgesic and anaesthetic effects of clove have been well-documented since the 13th century. It has been used to dull aches, reduce swelling, and provide relief from discomfort among people with toothaches, skin breakouts, headaches, and sometimes other conditions 3. Clove has been used historically in trade and medicine due to its medicinal properties.

Analgesic Effects of Clove

Clove oil has been widely used in dentistry as an analgesic agent 1. The active ingredient in clove

*Corresponding Author: Tagad Akash

Address: Department Of Pharmacognasy, HSBPVT's GOI, Faculty Of Pharmacy, Kashti, Ahmednagar, Maharashtra

Email ✉: akashtagad999@gmail.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



oil, eugenol, is responsible for its pain-killing effect 2. It has been used to relieve various types of pain, including tooth pain, joint pain, and spasmodic pain 1.

Mechanism of Action

Eugenol, the active ingredient in clove oil, works by inhibiting the production of prostaglandins, which are chemicals that cause inflammation and pain 2. By blocking the production of these chemicals, eugenol can effectively reduce pain and inflammation. Thus, clove gives quick relief from toothache without none to minimal side effects.

Clinical Applications

The analgesic properties of clove oil have been utilized in various clinical applications 1. For instance, it has been used as a topical analgesic in dentistry for tooth extractions, root canal treatments, and other dental procedures. It has also been used in traditional medicine to treat headaches, joint pain, and other types of pain.

Anesthetic Effects of Clove

Clove oil has also been used for its anesthetic effects. Eugenol, the active ingredient in clove oil, inhibits voltage-gated sodium channels, thereby acting as an anesthetic. This makes clove oil a potential alternative to synthetic analgesics, including morphine. Clove oil has been used in various forms of anaesthesia administration, including topical application through liquid immersion and epicutaneous application through microneedles. In a study conducted on earthworms, 1% epicutaneous clove oil was shown to sedate the stimuli response of earthworms at an extremely fast rate 2. In another study, the anaesthetic effects of clove powder were studied in juvenile Roach, *Rutilus rutilus*. The study found that exposure to various dosages of clove powder resulted in anaesthesia, with times to induction and recovery from anaesthesia showing a negative exponential response to dose 4.

Mechanism of Action

The anaesthetic effects of clove oil are primarily due to the presence of eugenol, which acts on the central nervous system to produce a numbing effect 4. Eugenol the active agent in clove inhibits the activity of voltage-gated sodium channels, which play a crucial role in the generation and propagation of action potentials in neurons. By blocking these channels, eugenol can effectively reduce the sensation of pain 3.

Clinical Applications

The anaesthetic properties of clove oil have been utilized in various clinical applications. For instance, it has been used as a local anaesthetic in dentistry for procedures such as tooth extractions and root canal treatments. It has also been used in traditional medicine to numb the skin before minor surgical procedures.

CONCLUSION

Clove, particularly in the form of clove oil, has demonstrated significant potential as an analgesic and anaesthetic agent. Its use in dentistry and other areas of medicine highlights its effectiveness in managing pain and inducing anaesthesia. However, more research is needed to fully understand the mechanisms of action and potential applications of clove in medicine.

FUTURE DIRECTIONS

While the analgesic and anaesthetic effects of clove are well-documented, there is still much to learn about this fascinating spice. Future research should focus on understanding the exact mechanisms of action of eugenol and other active compounds in clove. Additionally, clinical trials are needed to determine the safety and efficacy of clove oil in humans.

REFERENCES

1. [PharmEasy] : <https://pharmeasy.in/blog/ayurveda-uses-benefits-sideeffects-of-clove/>
2. [Scipedia] : https://www.scipedia.com/public/Wolfson_et_al_2023a

3. [Dr. Axe] :
 <https://draxe.com/nutrition/cloves-benefits/>
4. [Journal of Aquaculture Feed Science and
 Nutrition] :
 <https://medwelljournals.com/fulltext/?doi=jofafsu.2009.1.5>

HOW TO CITE: Tagad Akash, Sathe Yash, Ghode Rita, Analgesic and Anaesthetic Effects of Clove: An Extensive Review, Int. J. of Pharm. Sci., 2024, Vol 2, Issue 1, 672-674.
<https://doi.org/10.5281/zenodo.10569276>