



## GABAPENTIN IN TRIGEMINAL NEURALGIA: MECHANISM OF ACTION AND ITS ROLE IN MODERN THERAPY

**Maksudova H.N.****Atajanova I.A.****Department of Neurology, Pediatric Neurology, and Medical  
Genetics, Tashkent State Medical University.****Uzbekistan****<https://doi.org/10.5281/zenodo.17732105>**

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*To analyze the mechanism of action of gabapentin and evaluate its role in modern therapy for TN.*

### ABSTRACT

*Trigeminal neuralgia (TN) is a chronic pain disorder characterized by sudden, severe facial pain, significantly affecting patients' quality of life. First-line treatment options, such as carbamazepine, often have adverse effects, leading to the need for alternative therapies. Gabapentin, an anticonvulsant with neuromodulatory properties, has emerged as a promising treatment due to its ability to modulate calcium channels and reduce neuronal excitability. Understanding its mechanism of action and therapeutic potential is essential for optimizing TN management*

### Relevance

Trigeminal neuralgia (TN) is a chronic pain disorder characterized by sudden, severe facial pain, significantly affecting patients' quality of life. First-line treatment options, such as carbamazepine, often have adverse effects, leading to the need for alternative therapies. Gabapentin, an anticonvulsant with neuromodulatory properties, has emerged as a promising treatment due to its ability to modulate calcium channels and reduce neuronal excitability. Understanding its mechanism of action and therapeutic potential is essential for optimizing TN management.

### Objective

To analyze the mechanism of action of gabapentin and evaluate its role in modern therapy for TN.

### Materials and Methods

A literature review of clinical and preclinical studies on the pharmacodynamics, efficacy, and safety profile of gabapentin in TN was conducted. Data from peer-reviewed journals and international treatment guidelines were analyzed.

### Expected Results

Gabapentin is expected to demonstrate significant pain relief in TN by reducing hyperexcitability in the trigeminal nerve. Compared to traditional therapies, it may offer a favorable safety profile with fewer drug interactions and adverse effects. Additionally, its ability to improve sleep quality and reduce anxiety associated with chronic pain could further enhance patients' overall well-being. Studies suggest that gabapentin may also contribute to neuroprotection, potentially slowing the progression of neuropathic pain. However, further

research is necessary to refine dosing strategies, assess long-term efficacy, and determine its optimal role in combination therapies for TN.

### **Conclusion**

Gabapentin represents a valuable option in the treatment of TN, particularly for patients who cannot tolerate first-line therapies. Future studies should focus on optimizing its use in clinical practice and exploring potential combination therapies to enhance its effectiveness.

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