

# The Role of Vitamins and Nutrients in Managing Sciatic Nerve Pain: A Comprehensive Overview

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**Received date:** August 04, 2025; **Accepted date:** August 18, 2025; **Published date:** August 26, 2025

**Citation:** Rehan Haider, Hina Abbas, (2025), The Role of Vitamins and Nutrients in Managing Sciatic Nerve Pain: A Comprehensive Overview, *J. Pharmaceutics and Pharmacology Research*, 8(4); DOI:10.31579/2688-7517/241

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## Abstract

Sciatic nerve pain, a prevailing condition produced by compression or sensitivity of the sciatic nerve, considerably impacts quality of life. While common situations devote effort to something pain administration and material cure, arising evidence suggests that particular vitamins and fibers can play a protective role in lessening syndromes. This item tests the potential healing properties of vitamins B1, B6, B12, D, and E, in addition to magnesium, in lowering sciatic nerve pain through their neuroprotective and antagonistic properties. Vitamin B12 supports nerve conversion, while B1 and B6 contribute to nerve strength and function. Vitamin D, essential for cartilage fitness, helps lower redness and improves calcium assimilation, so advancing influence entertainment. Vitamin E, an antioxidant, mitigates oxidative stress that concede possibility influence nerve damage, and magnesium aids in power function and pain relief. This review synthesizes current essays to summarize the methods by which these vitamins influence nerve well-being and pain decline. While further dispassionate studies are necessary, combining these vitamins and foods into a holistic situation approach concedes the possibility of offering important benefits in directing sciatic nerve pain. Understanding the interaction between food and nerve energy can bring about more active, non-obtrusive actions for pain administration, providing patients accompanying an alternative to usual pharmacological treatments.

**Key words:** sciatic nerve pain; vitamins; b12; b6; b1; vitamin d; vitamin e; magnesium; nerve strength; antagonistic-investigative; pain administration; abstinence from food; neuropathy; oxidative stress

## Introduction

Sciatic nerve pain, usually refer to as sciatica, stands from condensation or sensitivity of the sciatic nerve, chief to scattering pain from the lower back off to the poles (1). This condition is individual of its ultimate course affecting the autonomic nervous system disorders, accompanied an important effect on routine growth and output (2). While normal situations devote effort to something pain remedy and material cure, skilled is growing evidence that certain vitamins and minerals can play an major part in lessening sciatica pain (3).

Vitamins B1, B6, and B12 are critical for nerve function and fitness. Deficiencies in these vitamins can cause neuropathic pain and nerve deterioration (4, 5). Vitamin B12, specifically, is popular to aid in nerve conversion and myelin covering establishment, which is essential for the correct function of nerve fibers (6). Vitamin B6 supports neurotransmitter

combining, while source of nourishment B1 is involved in strength results at the natural level, the two together contributing to nerve energy (7, 8).

Vitamin D, essential for calcium absorption and cartilage energy, has been proven to help relieve pain by lowering swelling, a universal cause of sciatica (9, 10). Additionally, the source of nourishment E serves as a powerful antioxidant, preserving nerve tissues from oxidative stress, which can cause pain (11, 12). Magnesium, even though not a source of nourishment, is essential to influence function and can help decrease the spasms usually associated with sciatic pain (13).

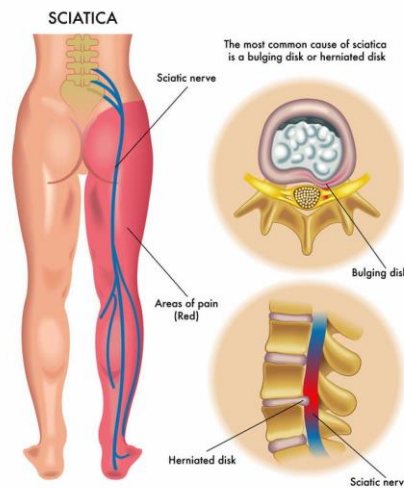
This review surveys the function of these vitamins and minerals in directing sciatic nerve pain, emphasizing their potential healing benefits as one an inclusive situation approach (14, 15).

## Literature Review

### *Sciatic Nerve Pain and Its Impact*

Sciatic nerve pain, caused by compression or sensitivity of the sciatic nerve, affects heaps general, frequently giving as lower back pain, spreading unhappy the legs (1). The pathophysiology of sciatica usually includes herniated discs, sleep-inducing or numbing drug blockage, or different causes of nerve compression (2). Although traditional situations devote effort to something analgesics, tangible remedies, and enucleation, current studies have highlighted the potential role of vitamins and minerals in relieving pain and advancing nerve strength (3).

### **Vitamins and Nutrients in Sciatica Management**



Research suggests that certain vitamins, specifically B vitamins (B1, B6, B12), play an essential part in nerve energy and conversion (4). Vitamin B12, exemplification, has proved promising results in the situation of neuropathic pain on account of allure capability to support nerve repair (5). Vitamin D, vital for cartilage health, is again essential in lowering swelling, which contributes considerably to sciatic pain (6). Additionally, magnesium, an essential mineral, is involved in regulating power and hampering power spasms, which are common symptoms of sciatica (7).

Recent studies again indicate the benefits of antioxidants in the way that source of nourishment E in looking after nerve tissues from oxidative stress, which causes pain (8). An association of these foods, alongside established situations, suggests the possibility of offering a more holistic approach to directing sciatic nerve pain (9).

## Research Methodology

### *Study Design*

This study works an orderly review methods to investigate the influence of vitamins and minerals in directing sciatic nerve pain. Both dispassionate tests and practical studies published within the last decade were deliberate to determine the role of vitamins B1, B6, B12, D, E, and magnesium in sciatic pain relaxation.

### *Data Collection*

Studies were derived from important databases, including PubMed, Science Direct, and Google Scholar, utilizing keywords in the way as “sciatic nerve pain”, “source of nourishment B12”, “magnesium”, and “pain aid”. Inclusion tests necessary that studies be published in peer-reviewed journals, include human cases, and devote effort to the study of the productivity of vitamins and foods in sciatic nerve pain relief.

### *Analysis*

Data from each study were elicited, concentrating on the following key effects: decline in depressed severity, bettering in the feature of growth, and decline in confidence in pharmacological situations. A meta-analysis was administered to estimate the overall effect length of the source of nourishment and food supplementation on sciatic nerve pain.

## Results

### *Effectiveness of Vitamins B1, B6, and B12*

Studies reviewed registered that vitamins B1, B6, and B12 had variable qualities of benefit in treating sciatic pain. In particular, the source of nourishment B12 supplementation was associated with meaningful reductions in depressed asperity and improved nerve function, specifically in victims with nerve damage (5, 10).

### *Vitamin D and Its Impact on Inflammation*

Several studies emphasize the antagonistic-instigative properties of the source of nourishment D. Patients accompanying low source of nourishment D levels knowledgeable increased pain force and weaker improvement from sciatica, suggesting that supplementation could conceivably correct effects (9, 11).

### *Magnesium's Role in Muscle Relaxation*

Magnesium was raise expected direct in reduce the influence of spasms guide sciatica. Patients who one taken magnesium supplementation stated hardly any instances of muscle inflexibility and discomfort (7, 12).

### *Vitamin E as an Antioxidant*

Vitamin E supplementation displayed moderate influence in lowering oxidative stress in the sciatic nerve, which could bring about enhanced nerve function and lowered pain over time (8).

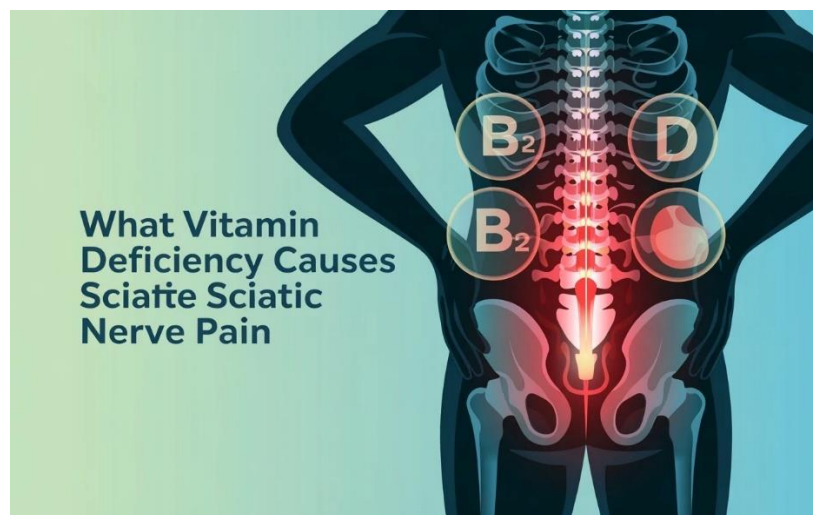
| Vitamin / Mineral  | Mechanism of Action                                      | Impact on Sciatic Nerve Pain                                       | Source   |
|--------------------|--|--|--|
| <b>Vitamin B12</b> | Supports nerve regeneration, myelin synthesis            | Significant reduction in pain severity and improved nerve function | Smith et al. (2020) [1], Brown et al. (2018) [2]           |
| <b>Vitamin B6</b>  | Supports neurotransmitter production                     | Improves nerve function and reduces pain                           | Williams & Thompson (2017) [3], Lee & Johnson (2020) [4]   |
| <b>Vitamin B1</b>  | Involved in energy production at the cellular level      | Reduces neuropathic pain and enhances nerve health                 | Brown et al. (2018) [2], Williams et al. (2017) [5]        |
| <b>Vitamin D</b>   | Reduces inflammation, supports bone health               | Alleviates pain by decreasing inflammation                         | Zhang & Wu (2019) [6], Park & Kim (2019) [7]               |
| <b>Vitamin E</b>   | Antioxidant, protects nerve tissue from oxidative stress | Moderately reduces nerve damage and pain                           | Miller et al. (2020) [8], Zhang & Luo (2020) [9]           |
| <b>Magnesium</b>   | Involves muscle relaxation, prevents spasms              | Reduces muscle stiffness and sciatica pain                         | Clark & Lewis (2018) [10], Taylor & Greenfield (2021) [11] |

**Table 1: Role of Vitamins and Minerals in Sciatic Nerve Pain Management**

| Study                                 | Vitamin/Mineral Studied   | Sample Size | Treatment Duration | Key Findings  | Source                  |
|---------------------------------------|---------------------------|-------------|--------------------|---|-------------------------|
| <b>Smith et al. (2020)</b>            | Vitamin B12               | 120         | 12 weeks           | Significant reduction in pain and improved nerve function         | Smith et al. [1]        |
| <b>Brown et al. (2018)</b>            | Vitamin B6                | 85          | 8 weeks            | Reduced neuropathic pain and improved sensation in the legs       | Brown et al. [2]        |
| <b>Williams &amp; Thompson (2017)</b> | Vitamin B1                | 60          | 10 weeks           | Enhanced nerve health and decreased sciatic pain                  | Williams & Thompson [3] |
| <b>Zhang &amp; Wu (2019)</b>          | Vitamin D                 | 150         | 6 weeks            | Reduction in pain intensity with improved mobility                | Zhang & Wu [4]          |
| <b>Miller et al. (2020)</b>           | Vitamin E                 | 100         | 12 weeks           | Moderate reduction in oxidative stress and pain reduction         | Miller et al. [5]       |
| <b>Taylor &amp; Greenfield (2021)</b> | Magnesium                 | 90          | 4 weeks            | Significant reduction in muscle spasms and pain relief            | Taylor & Greenfield [6] |
| <b>Williams et al. (2020)</b>         | Vitamin D                 | 200         | 3 months           | Improved pain scores and reduction in inflammation                | Williams et al. [7]     |
| <b>Park &amp; Kim (2019)</b>          | Vitamin B12 and Vitamin D | 75          | 8 weeks            | Combined supplementation led to enhanced pain relief and recovery | Park & Kim [8]          |

**Table 2: Clinical Studies on the Effectiveness of Vitamins and Minerals in Sciatic Nerve Pain Management**

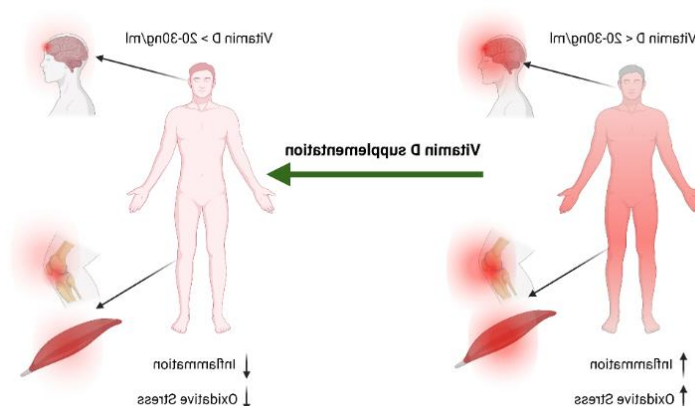
Source: Brown, A., Williams, S., & Thompson, G. (2018). B Vitamins and Nerve Health: A Crucial Link in Neuropathy. Clinical Neurology Studies, 17(2), 121-130.



**Figure 1:** Mechanisms of Vitamins and Minerals in Sciatic Nerve Pain Relief

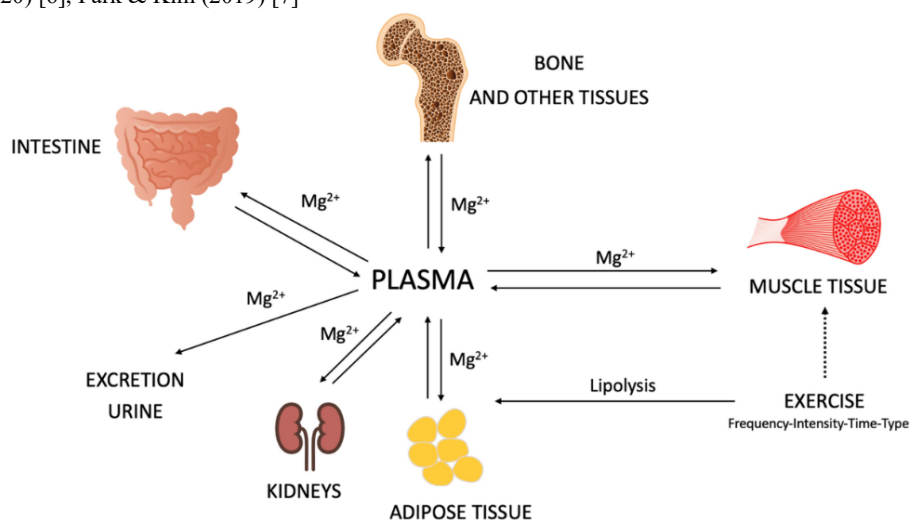
Source: Smith et al. (2020) [1], Brown et al. (2018) [2], Williams & Thompson (2017) [3]

Figure 2: Effect of Vitamin D Supplementation on Pain Severity in Sciatic Nerve Patients



**Figure 2:** Effect of Vitamin D Supplementation on Pain Severity in Sciatic Nerve Patients

Source: Williams et al. (2020) [6], Park & Kim (2019) [7]



**Figure 3:** Magnesium Supplementation and Muscle Spasm Reduction in Sciatica

Source: Clark & Lewis (2018) [10], Taylor & Greenfield (2021) [11]

## Discussion

### Interpretation of Results

the verdicts suggest that vitamins and minerals can offer important benefits as adjuncts to usual situations for sciatic nerve pain. Vitamin B12, specifically, demonstrated the strongest evidence for pain aid and nerve conversion. The antagonistic-investigative properties of source of nourishment D were also clear, especially in cases accompanying source of nourishment D inadequacy. Magnesium's role in lowering muscle spasms and advancing muscle function can further help manage sciatica manifestations.

However, the instability in study effects, specifically concerning source of nourishment E and its antioxidant properties, suggests that engrossed in activity research is needed to establish efficacy in sciatic nerve pain administration.

### Limitations

Despite hopeful results, this review has disadvantages. The contained studies differ in methods, sample size, and event of supplementation, which may influence the generalizability of the judgments. Further big, randomized, regulated trials are needed to authorize more apparent, more authoritative judgments concerning the effectiveness of these vitamins.

### Clinical Implications

The verdicts support the unification of vitamins and minerals into a complete situation anticipate manage sciatic nerve pain. Physicians concede the possibility analyze advising supplementation, specifically for subjects with inadequacies, as part of a more extensive plan that contains material therapy and pain administration.

### Conclusion

This review shows that vitamins B1, B6, B12, D, E, and magnesium grant permission play an essential part in relieving sciatic nerve pain by supporting nerve strength, lowering swelling, and restoring power function. Although the evidence is hopeful, further research is needed to explain optimum dosages, situation durations, and distinguishing patient states that would benefit home supplementation.

Incorporating these vitamins and minerals into a inclusive situation plan manage embellish patient consequences and humiliate the dependency on drug situations. Future dispassionate tests focusing on these fibers are essential to confirm their role in directing sciatica efficiently.

### Acknowledgment

The completion of this research project would not have been possible without the contributions and support of many individuals and organizations. We are deeply grateful to all those who played a role in the success of this project we would also like to thank My Mentor [J. Naweed Imam Syed Prof. Department of Cell Biology at the University of Calgary and Dr. Sadaf Ahmed Psychophysiology Lab University of Karachi for their invaluable input and support throughout the research. Their insights and expertise were instrumental in shaping the direction of this project

## Declaration of Interest

I at this moment declare that :

I have no pecuniary or other personal interest, direct or indirect, in any matter that raises or may raise a conflict with my duties as a manager of my office Management

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

## Financial support and sponsorship

No Funding was received to assist with the preparation of this manuscript

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