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Review J Steroid Biochem Mol Biol. 2025 Jan;245:106624. doi: 10.1016/j.jsbmb.2024.106624.

Epub 2024 Oct 9.

# Interplay of calcium, vitamin D, and parathormone in the milieu of infections and immunity: Reassessed in the context of COVID-19

Upasana Bandyopadhyay <sup>1</sup>, Debanjana Sen <sup>2</sup>, Deepika Ahuja <sup>1</sup>, Smit Pratik Mahapatra <sup>1</sup>, Debjit Biswas <sup>1</sup>, Rajkumar Maiti <sup>3</sup>, Sutanu Chakraborty <sup>4</sup>, Anukona Hazra <sup>1</sup>, Suparna Parua <sup>1</sup>, Asim Kumar Basak <sup>5</sup>, Arnab Das <sup>6</sup>, Nimisha Paul <sup>7</sup>, Mahuya Patra Purkait <sup>8</sup>, Alak Kumar Syamal <sup>2</sup>, Rajen Dey <sup>9</sup>, Koushik Bhattacharya <sup>10</sup>, Krishnendu Adhikary <sup>11</sup>, Aniruddha Bhattacharjee <sup>12</sup>

Affiliations

PMID: 39389269 DOI: [10.1016/j.jsbmb.2024.106624](https://doi.org/10.1016/j.jsbmb.2024.106624)

## Abstract

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is recognized for inducing severe respiratory symptoms like cough, and shortness of breathing. Although symptom severity varies, some individuals remain asymptomatic. This virus has sparked a global pandemic, imposing a substantial rate of mortality or morbidity, with extended periods of illness reported. People with underlying medical issues and the elderly are more likely to experience adverse results. The virus's frequent mutations pose challenges for medical professionals, necessitating adaptable therapeutic and preventive strategies. Vitamin D, a versatile regulatory molecule, not only influences physiological processes such as serum calcium regulation but also exhibits immunomodulatory functions. Calcium ions play a crucial role as secondary signal transduction molecules, impacting diverse cellular functions and maintaining homeostasis through ion channel regulation. Parathormone, another key regulator of serum calcium, often acts antagonistically to vitamin D. This review delves into the interplay of vitamin D, calcium, and parathormone, exploring their possible influence on the progression of COVID-19. The intricate signaling involving these elements contributes to adverse prognosis, emphasizing the need for comprehensive understanding. Monitoring and controlling these physiological factors and associated pathways have shown the potential to alter disease outcomes, underscoring the importance of a holistic approach.

**Keywords:** Calcium; Immune evasion; Immune response; Parathormone; SARS-CoV-2; Vitamin D.

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