Indian Journal of Experimental Biology
Vol. 64, June 2026, pp. 548-559
DOI: 10.56042/ijeb.v64i06.26583

Clinical role of sodium calcium phosphosilicate gel preparations in the prevention of enamel demineralisation in orthodontic treatment

Meilin Li, Lili Wan, Fang Liu & Hongbo Ou*

Department of Stomatology, The First People's Hospital of Zunyi (The Third Affiliated Hospital of Zunyi Medical University), Zunyi City 563000, Guizhou Province, China

Received 15 December 2025; revised 27 January 2026

Enamel demineralisation is a common and complex local problem in orthodontic treatment, this study evaluated the preventive effect of sodium calcium phosphosilicate gel preparations on enamel demineralisation during orthodontic treatment to provide a basis for clinical prevention. 128 patients undergoing orthodontic treatment from The First People's Hospital of Zunyi between January 2021 and January 2023 were divided into CT and CC groups. Both groups were treated with conventional treatment, the CC group was added treatment with sodium calcium phosphosilicate gel preparation. The enamel demineralisation index (EDI), plaque index (PLI), modified bleeding index (mBI), enamel demineralisation chalky lesions and incidence of demineralisation were mainly assessed in both groups. Secondary outcomes included quality of life scores, complications and adverse reactions incidence. After treatment, the indicators of both groups were remarkably different comparing with pre-treatment (P<0.05). The EDI, PLI, mBI, enamel demineralisation chalky lesion condition, the incidence of demineralisation complication and incidence of adverse reactions in the CC group were below the CT group, and the quality of life scores were above the CT group (P<0.05). sodium calcium phosphosilicate gel preparations are effective in preventing the occurrence of enamel demineralisation during orthodontic treatment and improving the quality of life of patients.

Keywords: Sodium calcium phosphosilicate gel, Orthodontic adjuvant therapy, Enamel demineralisation prevention, Demineralisation index, Plaque control, Orthodontic enamel protection