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Lubis, H.F.[a b] , Idrus, E.[c] , Suniarti, D.F.[c] , Amir, L.R.[c] , Bachtiar, E.W.[c] , Lestari, W.[d]

Vitamin administration on orthodontic tooth movement animal model: A systematic review
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[a] Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia
[b] Department of Orthodontics, Faculty of Dentistry, Universitas Sumatera Utara, Medan, Indonesia
[c] Department of Oral Biology, Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia
[d] Department of Fundamental Dental and Medical Sciences, Kulliyyah of Dentistry, International Islamic University, Kuantan, Malaysia

Abstract
Background: Duration is a very important aspect of orthodontic treatment and is still challenging for orthodontists. Numerous studies investigating the effects of biological substances, including dietary supplements, on orthodontic tooth movement (OTM) rate indicate positive results. Efforts to improve the OTM rate can be classified into four main categories: biological, biomechanical, physical, and surgical. Numerous animal studies have evaluated the impact of biological substances on the rate of OTM, yielding positive outcomes compared to those not given biological substances. Purpose: This systematic review investigated the impact of dietary supplement delivery both locally and systemically on the rate of OTM. Methods: Nine databases were searched until January 31, 2023, for animal studies evaluating the effect of supplement administration on OTM. The Systematic Review Center for Laboratory Animal Experimentation's (SYRCLE) risk of bias tools were employed. This review's reporting adhered to the PRISMA guidelines. Results: Sixteen studies were identified for inclusion. Local injections of vitamin D exhibited variable effects. Vitamin C and zinc, as well as vitamin A, showed insignificant effects based on the OTM rate. Vitamin E showed conflicting results. Combined prostaglandin E2 (PGE2) and calcium can increase the OTM. Effects of systemic administrations of omega-3 fatty acids can decrease the OTM in vivo. Conclusion: The pace of tooth movement in animals may vary depending on the local or systemic administration of vitamins, as applied to OTM animal models.

Author Keywords
animal model; medicine; orthodontic tooth movement; supplement; vitamin

Correspondence Address
Lubis H.F.; Department of Orthodontics, Indonesia; email: hilda.fitria@usu.ac.id

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