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ORIGINAL PAPERS

ANTIMICROBIAL EFFECT OF TOOTHPASTES CONTAINING BIRCH EXTRACT AND NANO-HYDROXYAPATITES

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Abstract. *The study investigates the antimicrobial efficacy of toothpaste formulations incorporating nano-hydroxyapatite (nHAP) and birch extract. Toothpastes were evaluated for their ability to inhibit bacterial growth, with observations revealing varied sensitivities among bacterial species to different formulations. Notably, toothpastes containing both nHAP and zinc exhibited heightened antimicrobial activity, while the addition of birch extract introduced variability in inhibition reactions across species. Further analysis delineated differences in effectiveness between nHAP-only and nHAP-birch extract formulations, suggesting the role of secondary metabolites in enhancing antibacterial properties. The study highlights toothpaste P11 as the most effective inhibitor of bacterial growth, offering a balanced combination of remineralization and antibacterial properties, except for S. mutans strain. Future research directions include time-course tests to assess long-term efficacy and oral microbiome studies to understand broader effects on oral microflora, informing the development of more targeted oral care products.*

Keywords: antimicrobial effect, advanced hydroxyapatites, birch extract, toothpastes

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