Optimization of Fluoride Varnish for Dental Applications

K. A. P. T. Chandrapriya, W. M. A. S. Wijerathna, and G. A. Sewvandi*

Department of Materials Science and Engineering, University of Moratuwa

**Email: galhenagea@uom.lk*

This paper explores optimizing a fluoride varnish to enhance fluoride absorption, improve adhesion, and optimize texture for better patient comfort. Aiming to reduce reliance on imported products, the locally produced varnish uses pharmaceutical-grade shellac, sodium fluoride, and calcium phosphate. Experimental results show superior initial fluoride uptake and sustained release compared to commercial alternatives. The study also finds that smaller shellac particle sizes improve adhesion and texture, enhancing the application process, especially for pediatric patients. This examines the synthesis of the varnish and its basic physical properties and analyzes tooth surfaces before and after application using EDX and SEM. The optimized varnish formulation offers longer-lasting protection on tooth surfaces.

Keywords: *Fluoride Varnish, Demineralization, Enamel Remineralization, Shellac, Fluoride Absorption*