

Orthodontic Faculty Development Fellowship Award

Dr. Sudha Gudhimella, *University of Louisville*

Dr. Sudha Gudhimella is a Clinical Assistant Professor in the department of Orthodontics at the University of Louisville. She received her BDS from the NTR University of Health Sciences, India and completed orthodontic residency with an MS at the University of Kentucky. Prior to residency, she did a fellowship in craniofacial biology at the University of Kentucky. Her current research focuses on developing a novel antimicrobial orthodontic elastomeric chain.



Since the advent of bonded fixed appliances for orthodontic treatment, poor oral hygiene and the associated development of white spot lesions (WSLs) have been a major concern. Patients who developed one or more WSLs during fixed orthodontic treatment have been reported to be as high as 46%. Though efforts have been made to reduce the risk for WSLs, no modality has been successful in completely eradicating this problem and further research is needed to elucidate more effective preventative and treatment options. Recently, biomedical research has focused on the antibacterial properties of S-Nitroso-N-acetylpenicillamine (SNAP), a synthetic Nitric Oxide (NO) donor that exhibits extended NO release when incorporated into low water-uptake polymers. Nitric oxide (NO) is innately present in the human body making it an optimal, biocompatible substance for use in biomaterials. NO exhibits antibacterial properties that functions to prevent biofilm formation. The objective of this study is to generate an antimicrobial orthodontic elastomeric chain using this technology.

A novel elastomeric chain developed in this study may offer an option for decreasing microbial colonization and the potential attributed problems during orthodontic treatment, including caries, white spot lesions and force degradation.

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