

**"VICTOR BABEȘ" UNIVERSITY OF
MEDICINE AND PHARMACY TIMIȘOARA
DOCTORAL SCHOOL
DENTAL MEDICINE**



**The Evaluation of Safety and Therapeutic Effects of
Substances and Natural Compounds in Dentistry**

ABSTRACT

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Throughout my career as an Associate Professor of Dental Medicine and a dedicated clinician stomatologist, my research has consistently focused on advancing key areas of dental science and practice. These efforts can be categorized into three major research directions: the study of cytotoxic and therapeutic dental substances, the exploration of Vitamin D's role in oral health and dental aesthetics, and the investigation of natural compounds in dentistry. Each of these domains has contributed to a deeper understanding of how specific substances and compounds influence dental outcomes, shaping both clinical practices and patient care. These research endeavors underscore my commitment to innovation and excellence in dental medicine, driving forward both scientific knowledge and practical applications in the field.

One notable study I was involved in is "The Biological Effects of Ozone Gas on Soft and Hard Dental Tissues and the Impact on Human Gingival Fibroblasts and Gingival Keratinocytes". This research provided invaluable insights into the use of ozone in dental treatments, exploring its therapeutic potentials and safety profiles on cellular levels. By assessing the impacts on both soft and hard dental tissues, we were able to identify potential therapeutic benefits and safety parameters, ultimately aiming to enhance treatment outcomes and patient safety.

Another significant piece of research was "Eugenol: In Vitro and In Ovo Assessment to Explore Cytotoxic Effects on Osteosarcoma and Oropharyngeal Cancer Cells". This study was crucial for understanding the cytotoxic properties of eugenol, a common component in dental materials, against cancerous cells. The findings not only contributed to the broader understanding of natural compounds in combating oral cancer but also helped in refining the use of eugenol in clinical settings, ensuring efficacy and safety.

My work also includes the study on "In Vitro Assessment of the Impact of Ultraviolet B Radiation on Oral Healthy and Tumor Cells", which provided critical insights into the effects of UVB radiation on oral cells. This research was pivotal in assessing the risks associated with UV exposure in dental treatments, enhancing our understanding of its safe application in dental practices.

Additionally, I explored the safety and efficacy of common dental substances in "Insights into the Cytotoxicity and Irritant Potential of Chlorhexidine Digluconate: An In Vitro and In Ovo Safety Screening". This study underscored the importance of evaluating the cytotoxicity and safety of widely used disinfectants in dentistry, advocating for informed usage and patient safety.

These research contributions have not only advanced our scientific understanding but have also directly impacted clinical protocols and safety standards in dentistry, improving the care and outcomes for patients. Through these studies, my work continues to shape dental practice, emphasizing the importance of a comprehensive approach to oral health that incorporates both innovative and time-tested therapeutic modalities.

Continuing with my contributions in the domain of Vitamin D implications in oral health and dental aesthetics, my research has significantly advanced our understanding of how this vital nutrient affects dental outcomes. These studies emphasize the broader implications of systemic health factors on dental treatments and preventive care.

One pivotal study, "Examining the Role of Vitamin D in Caries Susceptibility in Children's Deciduous Teeth: A Systematic Review," highlighted the potential role of Vitamin D in reducing caries incidence among children. This research synthesized existing data to draw correlations between lower Vitamin D levels and increased susceptibility to caries in deciduous teeth, suggesting that adequate Vitamin D levels might be crucial in early dental health.

Another key study, "A Systematic Review of the Relationship between Serum Vitamin D Levels and Caries in the Permanent Teeth of Children and Adolescents," extended this examination to older children and adolescents, focusing on permanent teeth. The findings reinforced the notion that Vitamin D plays a significant role in dental health beyond just the early years, influencing caries rates even as children grow into adolescence. This study suggests that maintaining adequate Vitamin D levels could be a part of holistic dental care and preventive strategies throughout a child's development.

Further exploring the impact of Vitamin D, "Impact of Vitamin D on Osseointegration in Dental Implants: A Systematic Review of Human Studies" provided a detailed analysis of how Vitamin D levels influence the success of dental implants. By reviewing human studies, this research offered critical insights into the

optimal management of implant procedures, suggesting that Vitamin D sufficiency is linked to improved osseointegration and potentially better long-term outcomes for dental implant patients. Thus, my research continues to shape dental practice by emphasizing the importance of a comprehensive approach to oral health that incorporates nutritional factors, thus enhancing both the aesthetic and functional aspects of dental medicine.

Continuing with my passionate contributions to the role of natural compounds in dentistry, especially within the realm of dental aesthetics, my research has provided significant insights into how these compounds can enhance oral health and offer therapeutic benefits.

One of the noteworthy studies, "Does Vitamin C Supplementation Provide a Protective Effect in Periodontal Health? A Systematic Review and Meta-Analysis," delves into the antioxidant properties of Vitamin C and its implications for periodontal health. This systematic review consolidated data suggesting that regular supplementation with Vitamin C could reduce inflammation and bleeding, thereby protecting against periodontal diseases. This finding is particularly important for dental aesthetics as maintaining periodontal health is crucial for ensuring the longevity of aesthetic dental treatments.

Another crucial piece of research, "Evaluating the Protective Role of Vitamin A Supplementation in Periodontal Health: A Comprehensive Systematic Review and Meta-Analysis," explores the benefits of Vitamin A in maintaining and enhancing periodontal tissue integrity. The results from this study indicate that Vitamin A supplementation may help improve periodontal health, which directly contributes to better aesthetic outcomes in dental practice by promoting healthier gums and supporting the structural stability of dental interventions.

Additionally, the comprehensive study "Vegetal Compounds as Sources of Prophylactic and Therapeutic Agents in Dentistry" investigates a range of plant-based compounds and their applications in dental care. This research highlighted the potential of various vegetal compounds to act as natural therapeutic agents, offering benefits from anti-inflammatory effects to antibacterial properties, which are essential for both preventive care and treatment of oral diseases. The implications of this study extend to enhancing the aesthetic quality of dental care by promoting natural, minimally invasive alternatives that support overall dental health.

These contributions not only underscore the importance of integrating natural compounds into dental practice but also enhance our understanding of their role in promoting oral health and aesthetics. By pioneering research in this area, my work continues to impact dental practices by emphasizing the importance of holistic, nature-based approaches, which are increasingly valued by patients seeking sustainable and health-conscious dental care solutions. Through these studies, I remain committed to advancing dental aesthetics by leveraging the therapeutic potential of natural compounds to improve patient outcomes and care quality.

My academic journey at the "Victor Babeș" University of Medicine and Pharmacy in Timișoara, where I began as a student and now serve as an Associate Professor of Dental Medicine, encapsulates a profound dedication to advancing the field of dentistry through extensive research and education. This journey has not only deepened my clinical expertise but has also significantly shaped my role as an educator in this dynamic discipline.

After completing my undergraduate studies in the Faculty of Dental Medicine in 2012, I embarked on a doctoral program that culminated in a thesis focused on "Changes in Clinical Periodontal and Gingival Esthetic Parameters During Orthodontic Treatment." This research was pivotal in enhancing our understanding of the aesthetic and clinical impacts of orthodontic interventions, establishing my reputation as an expert in both the practical and theoretical aspects of dental medicine.

Throughout my tenure as an academic, I have actively contributed to curriculum development and the mentoring of both undergraduate and postgraduate students. My teaching philosophy integrates rigorous clinical skills with scientific inquiry, ensuring that students not only acquire practical techniques but also develop the critical thinking skills necessary for innovative and effective dental practice.

In addition to my educational contributions, my clinical research has frequently been showcased at national and international dental conferences, leading to significant advancements in orthodontic protocols that prioritize patient comfort and outcome. These contributions have not only enriched patient care but have also provided valuable real-life learning experiences for my students, enhancing their education with practical applications of theoretical knowledge.

Reflecting on my academic and professional trajectory at the "Victor Babeș" University of Medicine and Pharmacy, my role has evolved from that of a diligent student to a leader in dental medicine. This progression is marked by a continuous

effort to enhance educational standards and clinical practices through innovative research and committed teaching.

Furthermore, my academic career has been complemented by further specialization through two Master's degrees—one in Health and Social Services Management and another in Psychopedagogy. These degrees have equipped me with comprehensive skills that extend beyond clinical practice into administrative and educational strategies, enabling me to effectively contribute to the evolution of healthcare services and policy development.

My ongoing commitment to dental medicine is reflected in my dedication to continuous professional development, contributing to the broader field of healthcare education and management. This holistic approach ensures that I remain at the forefront of dental education, prepared to meet and address the ever-evolving challenges of the healthcare landscape.

Since 2013, I have been a crucial part of the Faculty of Dental Medicine, where I currently serve as an Associate Professor in the Department II, Discipline of Dento-Facial Aesthetics. My role allows me to merge my clinical expertise with a passion for teaching, fostering an educational environment that emphasizes both technical skill and aesthetic judgment. This comprehensive approach ensures that our graduates are not only technically proficient but also adept at integrating aesthetic considerations into their clinical practice, preparing them for the multifaceted demands of the dental profession.

Overall, my academic journey is characterized by a relentless pursuit of excellence, innovation, and a deep commitment to enhancing the educational and clinical landscape of dental medicine.

My professional journey in dental medicine, which began immediately after graduating from the "Victor Babeș" University of Medicine and Pharmacy in Timișoara, has been marked by continuous advancement and dedication to excellence. From my initial steps as a student in the Faculty of Dental Medicine to my current role as an Associate Professor and seasoned clinician, my career has been characterized by a profound commitment to advancing the field through rigorous practice, specialized training, and innovative leadership in dental health.

Upon obtaining my degree in Dental Medicine in 2012, I pursued a focused residency in periodontology, enhancing my expertise in the etiology and treatment of periodontal diseases—a foundation that has significantly informed my clinical and

research activities. Throughout my residency and subsequent professional practice, I have been involved in several research initiatives that have led to publications in peer-reviewed journals, contributing to the global knowledge base on periodontal health and treatment innovations.

My professional development continued beyond clinical practice, as I took on roles in academia, teaching, and mentoring the next generation of dental professionals. This dual focus on practice and education has enabled me to share my knowledge and experience extensively, shaping the skills and perspectives of emerging dental practitioners.

In addition to my clinical and academic roles, my professional achievements have been further distinguished by my leadership in establishing SC Centrul Medical Buzatu SRL, a private practice that not only provides comprehensive dental services but also serves as a model for community-based health care delivery. My involvement in this project—from planning and implementation to ongoing management—highlights my capabilities in healthcare administration and my commitment to enhancing access to quality dental care.

Furthermore, my proficiency in multiple languages has empowered me to engage effectively in international collaborations and conferences, enriching my practice and teaching with diverse perspectives and advanced technologies. This multilingual ability has also facilitated my participation in global dental communities, enhancing the exchange of clinical practices and research outcomes.

Reflecting on my professional achievements, it is evident that my career has been driven by a commitment to excellence in both clinical outcomes and patient care, underpinned by continuous professional development and a passion for teaching. My extensive involvement in clinical practice, specialized training, and community health initiatives have not only advanced my professional skills but have also contributed significantly to the field of dental medicine.

As I continue to serve in my academic and clinical roles, I am inspired by the ongoing opportunities to further enhance dental health practices, mentor future dental professionals, and contribute to the broader field of healthcare. My career trajectory is a testament to the dynamic integration of comprehensive dental care, innovative research, and dedicated community service, ensuring that I remain at the forefront of the dental profession, ready to adapt to and lead in an ever-evolving healthcare landscape.