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Nanotechnology in Dentistryn

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Abstract: *In the XXI century, application of nanostructures in oral medicine has become common. In oral medicine, using nanostructures for the treatment of dental caries constitutes a great challenge. There are extensive studies on the implementation of nanomaterials to dental composites in order to improve their properties, e.g., their adhesive strength. Moreover, nanostructures are helpful in dental implant applications as well as in maxillofacial surgery for accelerated healing, promoting osseointegration, and others. Dental personal care products are an important part of oral medicine where nanomaterials are increasingly used, e.g., toothpaste for hypersensitivity. Nowadays, nanoparticles such as macrocycles are used in different formulations for early cancer diagnosis in the oral area. Cancer of the oral cavity—human squamous carcinoma—is the sixth leading cause of death. Detection in the early stage offers the best chance at total cure. Along with diagnosis, macrocycles are used for photodynamic mechanism-based treatments, which possess many advantages, such as protecting healthy tissues and producing good cosmetic results. Application of nanostructures in medicine carries potential risks, like long-term influence of toxicity on body, which need to be studied further. The introduction and development of nanotechnologies and nanomaterials are no longer part of a hypothetical future, but an increasingly important element of today's medicine.*

Keywords: composites; nanoparticles; photodynamic therapy; photosensitizer; antibacterial nanoagents; nanotechnology; re-mineralization; caries; oral cancer; oral bacteria