

Title: Recent Advancements and Applications of Nanosensors in Oral Health: Revolutionizing Diagnosis and Treatment

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Abstract: Advances in the field of nanomaterials are laying the foundation for the fabrication of nanosensors that are sensitive, selective, specific, cost-effective, biocompatible, and versatile. Being highly sensitive and selective, nanosensors are crucial in detecting small quantities of analytes and early diagnosis of diseases. These devices, operating on the nanoscale, detect signals, such as physical, chemical, optical, electrochemical, or biological, and then transduce them into a readable form. They show great promise for real-time, point-of-care, and home-based applications in health care. With the integration of wireless technology, these nanosensors, specifically biosensors, can potentially revolutionize therapeutic techniques. These advancements particularly impact the oral cavity, the primary entry point for various bodily substances. Nanosensors can transform oral and dental health practices, enabling timely disease diagnosis and precise drug delivery. This review examines the recent advancements in nanobiosensors, exploring their applications in various oral health conditions while discussing their benefits and potential limitations.

Key words: Nanomaterials Nanosensors Nanobiosensors Point-of-care diagnostics Oral disease detection Biocompatible sensing

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