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Plasma Applications in Biomedicine

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"Plasma Applications in Biomedicine" explores the innovative intersection of physics and life sciences, focusing on the use of cold atmospheric plasmas (CAPs) for disease treatment and tissue regeneration. Initially used for material processing, CAPs have evolved to engage intricately with biological tissues, offering novel disinfection and healing capabilities without thermal damage. CAPs are gaining attention in healthcare, especially dermatology and surgery, for their antibacterial properties, ability to treat chronic wounds, and effectiveness against antibiotic-resistant strains like MRSA. The medical applications of CAPs fall into the following two categories: direct and indirect treatments, which utilize various plasma devices such as torches, jets, and needles. CAPs produce reactive oxygen and nitrogen species that modulate biological responses, particularly in hydrated or liquid environments. This Special Issue of Biomedicine compiles cutting-edge research on CAPs and plasma-activated liquids (PALs), highlighting their therapeutic potential across diverse medical fields, including endodontics, wound healing, tissue regeneration, cancer treatment, and antibacterial solutions for bone infections and vaginal health. The featured studies underscore the transformative potential of plasma technology in medicine, emphasizing the need for ongoing research to fully realize its therapeutic benefits and understand its mechanisms of action.



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