



Megha Rajput

William Carey University College of Osteopathic
Medicine Hattiesburg, USA

History and Clinical Applications of Tissue Dielectric Constant

Abstract:

Tissue Dielectric Constant (TDC) is a vital parameter in biomedical research, offering insights into tissue properties without invasive procedures. This essay explores its evolution, physiological assessments, clinical applications, emerging uses, and future directions.

The Description and Evolution of the Method: TDC measures tissue electrical properties via low-level electric fields, with roots dating back to mid-20th-century studies. Recent advancements, like Mayrovitz's 2018 work on age-related skin firmness, enhance understanding.

In Vivo Physiological Assessments: Studies, such as Mayrovitz's 2016 research on gender differences in TDC, illustrate its varied applications. Koehler's 2019 study on post-cancer arm girth and TDC highlights its utility in tracking physiological changes.

Clinical Assessments by Condition: TDC aids in edema assessment, tumor differentiation, and lymphedema tracking. Mayrovitz's 2022 study on breast tumor TDC ratios exemplifies its diagnostic potential.

Potential Emerging Applications: New applications include head and neck lymphedema detection (Mayrovitz, 2021) and obesity-related TDC studies (Mayrovitz, 2020), expanding TDC's clinical utility.

Recommendations for Future Research & Applications: Standardized protocols and exploration of TDC's correlation with tissue composition in specific diseases are crucial for future advancements.

Conclusion: TDC, from its foundational principles to diverse clinical applications and emerging uses, holds promise for non-invasive medical diagnostics and personalized patient care.

Biography

Megha Rajput is a second-year medical student at William Carey University College of Osteopathic Medicine. She has been mentored in dermatology and research by Dr. Howard Maibach for the past three years. Her passions in medicine have been geared towards dermatology which led her to edit a chapter in the Handbook of Cosmetic Dermatology and present her Skin Pollutant research at the Pediatric Research Alliance Conference in Atlanta. She is originally from Houston, Texas, and values family time outside of her academic pursuits.