

Detection of colorectal cancer in mice with terahertz technology-determination of an optimal frequency

Jian Ding¹, Yong Chen¹, Dan Li², Yaling Liu¹, Liwen Hu³, Yuanlin Qi³, Yi Huang⁴, Zhenghao Zhang⁴, Tingyan Chen¹, ChengDang Wang¹, and Shuncong Zhong⁴

¹National Regional Medical Center

²Fujian Medical University Union Hospital

³Fujian Medical University

⁴Fuzhou University School of Mechanical Engineering and Automation

May 26, 2023

Abstract

Colorectal cancer is one of the most prevalent malignancies worldwide, and long-term chronic colitis is considered to be an important factor in the etiological study of colorectal cancer. As an emerging detection technology, the non-invasive, non-ionizing, and fingerprint spectroscopic features of terahertz technology have tremendous application prospects in disease diagnosis. Therefore, this study aims to explore the value of terahertz technology in colitis-related cancers by constructing an inflammation-associated mouse colorectal cancer model. In this paper, we found that the terahertz spectroscopy technique can effectively distinguish colitis-associated cancer from normal tissue, and for the first time, we searched that 1.8 THz may be the best terahertz frequency for diagnosing colorectal cancer in mice, suggesting that we can use the terahertz technique for rapid diagnosis of colorectal cancer histopathology.

Hosted file

Manuscript.docx available at <https://authorea.com/users/622603/articles/645660-detection-of-colorectal-cancer-in-mice-with-terahertz-technology-determination-of-an-optimal-frequency>