

ABSTRACT

ECCT is a cancer therapy that uses an electric field to influence cancer cells during mitosis, stopping cell division which leads to the self-destruction of the cancer cells. This research aims to develop and apply an Arduino-based Electric Field Meter (EFM) with 6 channels for measuring electric fields on the Apparel Electro Capacitive Cancer Therapy (ECCT) helmet model. The device developed in this research is able to accurately measure electric field intensity at six different points on the head, providing an effective electric field distribution map for therapeutic evaluation. The results of the sensor testing show that the 4x4 sized sensor was chosen because it provides a stable linear response to voltage variations from 0 to 20 V. The results of electric field detection using an Arduino-based tool show a value of 498 V/m, compared to 548 V/m detected by EMF conventional meters. The Arduino-based tool demonstrated an accuracy of 90.87% compared to an EMF meter, showing significant potential as an alternative electric field measuring tool in ECCT helmet applications, although further calibration is required. The results of this research provide an important contribution to the development of more effective and safer cancer therapy technology using electric fields. The use of an Arduino-based electric field measuring device with 6 channel EFM not only supports more targeted and personalized cancer treatment, but also opens up wider application potential in medical research and health technology.

Keywords: *ECCT, microcontrollers, electric fields, sensors, Cancer therapy*