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Verification of angular dependence in MOSFET detector

In vivo dosimetry is an essential tool for quality assurance programs, being a procedure commonly performed with thermoluminescent dosimeters (TLDs) or diodes. However, a type of dosimeter that has increasing popularity in recent years is metal-oxide-semiconductor field effect transistor (MOSFET) detector. MOSFET dosimeters fulfill all the necessary characteristics to realize a in vivo dosimetry, since it has small size, good precision and feasibility of measurement, as well as easy handling. Nevertheless, its true differential is to allows reading of the dose in real time, enabling immediate intervention in the correction of physical parameters deviations and anticipation of small anatomical changes in patient during treatment. In order for the MOSFET dosimeter to be better accepted in clinical routine, informations related to its performance should be available frequently. For this reason, this work proposes to verify reproducibility and angular dependence of the standard sensitivity MOSFET dosimeter (TN-502RD-H) for Cs-137 and Co-60 sources. Experimental data were satisfactory and MOSFET dosimeter presented a reproducibility of 3.3% and 2.7% (1 SD) for Cs-137 and Co-60 sources, respectively. In addition, an angular dependence of up to 6.1% and 16.3% for both radioactive sources, respectively. It is conclusive that MOSFET dosimeter TN-502RD-H has satisfactory reproducibility and angular dependence. This means that although precise measurements, special attention must be taken for applications in certain anatomical regions in patient.

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