

**Objectives:** Fluorine-18 fluorodeoxyglucose (18F-FDG) is an excellent Positron Emission Tomography (PET) tumor-localizing radiopharmaceutical. The objective of this study is to determine the FDG sensitivity of a hand-held cadmium zinc telluride (CdZnTe) probe designed as a gamma guidance system.

**Methods:** A needle tip of 18F-FDG was used as a point source with activities ranging from 1 to 40 uCi/0.1ml. Sensitivity testing was conducted using a Navigator Gamma Guidance System (United States Surgical Corporation, Norwalk, CT, USA). Three separate sensitivity tests were conducted to characterize; (1) probe surface sensitivity, (2) source-to-probe distance sensitivity (1-5 cm), and (3) source-to-probe angularity sensitivity ( $0^{\circ}$ - $90^{\circ}$ ). Ten separate measurements (5 second counts) for each data point were collected and used to determine the mean and variability of the measurements.

**Results:** The probe surface sensitivity testing indicated that the probe face was the most sensitive location. The source-to-probe distance sensitivity testing resulted in a predictable drop-off in sensitivity as the distance was increased. The source-to-probe angularity testing found that the highest sensitivity was measured with an alignment angle between  $0^{\circ}$ - $30^{\circ}$ .

**Conclusion:** The gamma probe tested was shown to be sensitive to 18F-FDG. The probe face was the most sensitive location. As expected there was a drop off in counts, in a predictable manner, as the source to probe distance was increased. Additionally, probe face and the point source angle (angularity) influenced sensitivity in a predictable manner. Even though the probe was not designed to detect FDG, we describe the most sensitive settings for clinical use.