MEASURED MAMMOGRAPHIC X-RAY SPECTRA TRANSMITTED BY CIRS BREAST PHANTOM

Squier PL  
Center of Development of Nuclear Technology - CDTN / CNEN, Minas Gerais, Brazil

Oliveira PMC  
Universidade Federal de Minas Gerais - UFMG Fac. Medicina, Minas Gerais, Brazil

Dias FS  
Center of Development of Nuclear Technology - CDTN / CNEN, Minas Gerais, Brazil

Bruno M. Mendes, Nogueira MS  
Center of Development of Nuclear Technology - CDTN / CNEN, Minas Gerais, Brazil

The mammography technique is the standardly used for breast imaging, which is used for cancer diagnosis and clinical monitoring. This radiological imaging modality is widely used for population screening. However, the breast is a radiosensitive organ and have a risk of radiation-induced cancer. Therefore, the breast density (the proportion of glandular tissue) is associated with this risk and very important your accuracy determination. The risk is directly linked to the glandular tissue proportion, it is necessary to know the breast glandularity to estimate the Mean Glandular Dose (DG) with good accuracy using appropriate conversion factors. This work aims to characterize mammographic x-ray beams transmitted by breast phantoms (5 mm) composed from known proportion of glandular and adipose tissue-equivalent materials (CIRS: 0-100; 30-70; 50-50; 70-30; 100-0 and PMMA). The spectra were measured under Mo/Mo, Mo/Rh and W/Rh target/filter combinations using a spectrometry system with a CdTe detector. The differences between the spectra transmitted by phantoms from the reference spectra measurements are lesser than 15 percenten compared 100 percent of glandularity (CIRS:100-0) vs. 100 percent adipose (CIRS:0-100). The PMMA phantom is similar to (CIRS:50-50) with a maximum difference of 1.6 percent. These transmitted spectra are important to assist accuracy of evaluated glandularity on the mammographic procedures. Acknowledgments. The authors are thankful to CDTN/CNEN, CNPq sem fronteiras. This work was supported by FAPEMIG and CNPq.