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**Evaluation of the particle size of radiopharmaceuticals by membrane filtration.** I. Oliveira, P. Martins, C. Vicentin, J. Mengatti, N. Fukumori, M. Matsuda; IPEN-CNEN/SP, Brazil (150449)

**Objectives:** The aim of this study was to develop a membrane filtration technique to determine the particle size of the radiopharmaceuticals Tin Colloid, Dextran 500, Dextran 70 and Phytate labeled with  $^{99m}\text{Tc}$ . Tin Colloid is used for imaging liver, spleen and bone marrow. Dextran and Phytate are used for lymphoscintigraphy. **Methods:** Labeling with  $^{99m}\text{Tc}$  was performed by adding  $37\text{-}185\text{ MBq mL}^{-1}$  of  $^{99m}\text{TcO}_4^-$ . Filter holders and polycarbonate membranes of 13 and 25 mm diameter and 0.2 to 5.0 mm pore size were used. The assay was carried out 15-30 minutes after labeling. 50-300 mL and 25-35 mL samples were passed through 25 and 13 mm diameter filters, respectively. 2 or 3 holders containing different pore size membranes were connected in sequence and flushed with saline. The filter holders were disconnected and each retained activity was measured in a curiemeter. **Results:** Parameters which affect the particle size distribution, such as reproducibility, labeling activity, labeling time, membrane diameter and elution solvent were evaluated. The reproducibility was verified in  $^{99m}\text{Tc}$ -Tin Colloid and 84.56% of activity was in the eluate, with a standard deviation of 4.21. Higher labeling activity increased the number of particles smaller than 0.8 mm. 240 minutes after labeling 5.0 mm particles and eluate activities decreased and the percentage of 0.8 mm particles increased up to 2.7 times.  $^{99m}\text{Tc}$ -Dextran 500,  $^{99m}\text{Tc}$ -Dextran 70 and  $^{99m}\text{Tc}$ -Phytate with 13 mm diameter membranes and 0.6, 0.4 and 0.2 mm pore size presented a decrease in the particle size when carried out with purified water, increasing the percentage of particles in eluate. 90% of particles were smaller than 0.4  $\mu\text{m}$ . Resistance to elution was smaller when using purified water. **Conclusions:** This method showed to be practical and efficient for colloids.