Quality control of radiopharmaceuticals in Shiraz Namazi Teaching hospital

Hossein Sadeghpour$^{1,2,5}$, Mehrosadat Alavi$^3$, Majid Shahedi$^1$, Amirhossein Sakhteman$^1$, Farshid Zare$^1$

$^1$ Department of Medicinal Chemistry, School of Pharmacy, Shiraz University of Medical Sciences, Shiraz, Iran.
$^2$ Nuclear Medicine and Molecular Imaging Research Centre, Shiraz University of Medical Sciences, Shiraz, Iran.
$^3$ Department of Nuclear medicine, Namazi hospital, Shiraz University of Medical Sciences, Shiraz, Iran.
$^4$ Medical Radiation Engineering Department, ShahidBeheshti University, Tehran, Iran.
$^5$ Student Research Committee, Shiraz University of Medical Sciences, Shiraz, Iran.

Abstract:
Radiopharmaceuticals are a special group of drugs that many of them are eventually prepared the nuclear medicine departments of the hospital. Therefore quality control procedures such as sterility, radionuclide, radiochemical and chemical purity should be carried out in the hospitals. Methods: In this study radiochemical purity for more than 300 preparations of three different radiopharmaceutical formulations from commercial kits were tested using instant thin layer chromatography. The formulations namely 99mTc-DTPA, 99mTc-MDP and 99mTc-MIBI were obtained from Pars Isotope Co. Several paper chromatographic systems were used in this study. Results and Discussion: The results showed that the most observed impurities were hydrolyzed reduced technetium. After the preliminary study we decided to change our imaging schedule in the nuclear medicine department and the sequence of imaging was changed. Also Our equipments for detection of radioactivity in paper chromatography were changed, for example the old dose calibrator was replaced by a gamma camera or a more accurate dose calibrator. Another modification in our study was replacement of factory recommended thin layer chromatography systems instead of those were recommended by USP. Consequently, the preparations showed better radiochemical purities.

Keyword: Quality control, Thin Layer Chromatography, Radiopharmaceuticals