

Technetium-99m complex of *N*-(2-pyridylmethyl)iminodiacetic acid as a new renal radiopharmaceutical

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A tetradentate chelating agent constituting of an iminodiacetic acid group and a nitrogen atom of pyridine, *N*-(2-pyridylmethyl)iminodiacetic acid (PMIDA), was coordinated with ^{99m}Tc and evaluated as a renal functional agent. The complex of PMIDA with ^{99m}Tc was prepared by using a stannous chloride solution as a reducing agent. The chelating efficiency was analyzed by thin layer chromatography and electrophoresis. Chelation with ^{99m}Tc resulted in a single radiochemical product. Biological studies were performed in mice and rats. ^{99m}Tc -PMIDA was removed from the circulation solely by the kidneys. Clearance of ^{99m}Tc -PMIDA from the blood and the kidneys was as rapid as that of ^{99m}Tc -diethylenetriaminepentaacetic acid. The rate of blood clearance was unaffected by the administration of probenecid (a test for tubular secretion by the weak-acid mechanism), so that the glomerular filtration rate could be estimated by measuring its clearance from the blood. The results in animals with myohemoglobinuric acute renal failure suggested that ^{99m}Tc -PMIDA might be a useful renal function radiopharmaceutical.

Key words: ^{99m}Tc ; *N*-(2-pyridylmethyl)iminodiacetic acid, renal agent, radiopharmaceutical