Ain Shams University
Faculty of Science
Chemistry Department

Radiolabeling of Some Pharmaceutical Compounds with Technetium-99m for Diagnostic Purposes

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Radiolabeling of Some Pharmaceutical Compounds with Technetium-99m for Diagnostic Purposes

This work has been carried out to study the labeling of some anti-inflammatory pharmaceuticals (diclofenac and dipyrone) and antibiotics (amikacin) with technetium-99m to produce radiolabeled compounds and study their imaging ability of the septic and aseptic inflammation.

^{99m}Tc-amikacin was successfully labeled with Technetium - 99m by direct labeling technique. A radiochemical yield of 95±3% was obtained by adding ^{99m}Tc to 250µg amikacin in the presence of 25µg $SnCl_2.2H_2O$ at pH 5 for 15 min. Biodistribution studies in mice were carried out in experimentally induced septic and aseptic inflammation in the left thigh using *E.coli*, and turpentine oil, respectively. ^{99m}Tc-amikacin discriminates well between septic and a septic foci showing high T/NT ratio (7.5±0.3) in the infectious lesion and abscess to normal muscle ratio when compared with the uptake of septic foci at 2 hour post injection.

^{99m}Tc-diclofenac was successfully labeled with Technetium-99m by direct labeling technique. A radiochemical yield of 96±2% was obtained by adding ^{99m}Tc to 100µg diclofenac in the presence of 50µg $SnCl_2.2H_2O$ at pH7 for 30 min. Biodistribution studies in mice were carried out in experimentally

induced septic and aseptic inflammation in the left thigh using *E.coli*,and turpentine oil. ^{99m}Tc-diclofenac is a good inflammation imaging agent. Higher uptake (T/NT=3.7 ± 0.02) in the sterile inflamed muscle injected with turpentine oil than that of infected muscle injected with bacteria was observed.

^{99m}Tc-dipyrone was prepared at pH 5 with a radiochemical yield of 95.5±2% by adding ^{99m}Tc to 100µg dipyrone in the presence of 25µg $SnCl_2.2H_2O$ for 30 min. Biodistribution studies in mice were carried out in experimentally induced septic and aseptic inflammation in the left thigh using *E.coli* and turpentine oil. ^{99m}Tc-dipyrone is a good inflammation imaging agent as its accumulation in the inflammation sites remained with *T/NT* nearly (5.5±0.03) up to 1 hour in the sterile inflamed muscle injected with turpentine oil which was higher than that of infected muscle injected with bacteria.

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