Study of interspecies differences in plasma protein binding of new radiopharmaceuticals

Abstract

This paper engages in a study on the plasma protein binding of chosen radiopharmaceuticals from the perspective of interspecies comparison. An equlibrium dialysis at 37°C was employed for the plasma protein binding determination and experiments were implemented on human, bovine, rabbit and rat plasma.

Studies on the plasma protein binding were carried out with three new radiolabelled chelates and clinically routinely used bifunctional chelate DTPA radiolabelled with ^{99m}Tc (^{99m}Tc-DTPA). Binding was determined for the newly bifunctional chelate ^{90}Y-DTPA-oxn and for the two potencional peptide based radiopharmaceuticals: ^{177}Lu-DOTA-TATE a ^{177}Lu-DOTA-MG-1. The results received were evaluated in light of interspecies comparison and compared with the results of the plasma protein binding of a clinically routinely used ^{99m}Tc-DTPA. Measuring data were analyzed using statistic data processing. The results of this analysis showed that statistically significant difference is for the complex ^{99m}Tc-DTPA between human and bovine and also between human and rabit plasma at the level of significance alfa 0,05.

The results of all experiments carried out showed that the plasma protein binding is very low and therefore it is not a factor that would significantly influence the pharmacokinetics of material studied.