Abstract This paper engages in the newly prepared bifunctional chelate DTPA-oxn which has a potential use in radiolabelling biological macromolecules. The aim of the paper was to prepare a radiolabelled bifunctional chelate DTPA-oxn with a suitable radionuclide, the ^{90}Y has been used. Binding of ^{90}Y-DTPA-oxn to human, bovine, rabbit and rat plasma protein was determined. An equilibrium dialysis at 37°C was employed for the plasma protein binding determination. The received results received were compared with the results of plasma protein binding of a clinically routinely used bifunctional chelate DTPA radiolabelled with ^{99m}Tc (^{99m}Tc-DTPA). The results showed a low plasma protein binding of these radiolabelled chelates. Interspeices comparison demonstrated that the results obtained for human, bovine and rat plasma are comparable, whereas those obtained for rabbit plasma are higher. This brings a conclusion that the binding of ^{90}Y-DTPA-oxn and ^{99m}Tc-DTPA to plasma protein is not a factor that can influence their biological behavior.