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Technetium 99m labeled Human immunoglobulin G polyclonal antibody –different approach for better results

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The aim of the study was to compare the radiochemical purity of 99mTc-human immunoglobulin G using direct and indirect methods of labeling.
Radiopharmaceuticals used for infection and inflammation imaging have significant use for good patient management outcomes especially in developing African countries. Several radiopharmaceuticals have been used for the diagnosis of infection and inflammation disorder. Even though none of them is ideal each one has its own strengths and weaknesses. Human immunoglobulin G as a ligand labeled with technetium-99m radionuclide provide an important characteristic since there is commercially introduced injectable form of human immunoglobulin (IgG) suitable for intravenous administration for the treatment of immunodeficiency syndrome and the availability of technetium-99m radionuclide which has the ideal radiation characteristics for diagnostic imaging from the Mo-99/Tc-99m generator.
Human immunoglobulin G polyclonal antibody can be labelled with technetium using direct and indirect methods. Direct method of labeling uses a weak ligand so as to facilitate the labeling process. Sodium pyrophosphate and sodium glucoheptone the most commonly used weak ligands. Indirect labeling uses HYNIC that can serve us a bifunctional agent that can bind with both the antibody and the radionuclide.
We compared the labeling efficiency including radiochemical purity of directly labeled and indirectly labeled human immunoglobulin G polyclonal antibody for infection and inflammation disorder imaging and we found out that direct labeling method provide better labeling efficiency than indirect labeling method. In addition it was realized that there is no difference in the labeling efficiency to use sodium pyrophosphate and sodium glucoheptonate as a weak ligand.
Key words: Human immunoglobulin G, direct labeling, indirect labeling, infection, inflammation

Primary authors: MARIE, Aschalew Alemu (Addis Ababa University, College of Health Sciences, School of Medicine, Internal Medicine Department, Nuclear Medicine Unite); Mr LAGEBO , Yohannes Jorge (Addis Ababa University, College of Health Sciences, School of Medicine, Internal Medicine Department, Nuclear Medicine Unit); Mrs APOSTOLOVA, Paulina (Faculty of Medical Sciences, Goce Delcev University Stip); Mr TRIPUNOSKI, Toni (Institute of Pathophysiology and Nuclear Medicine, Faculty of Medicine, University Ss Cyril and Methodiuous, Skopje); Prof. IVANOVSKA, Emilija Janevik (Faculty of Medical Sciences, Goce Delcev University Stip)

Presenter: MARIE, Aschalew Alemu (Addis Ababa University, College of Health Sciences, School of Medicine, Internal Medicine Department, Nuclear Medicine Unite)