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SHORT-LIVED RADIOMETALLIC LABELED MoAb FOR HIGH SENSITIVITY IRMA:  
67Ga-DF-DAS-MoAb.

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Sensitivity of IRMA assay depends on the labeled MoAb specific activity (sa); as the most applicable approach to increase it, exploitation of radionuclide half-life was considered. Recently, using a bifunctional chelating agent, doxoramine (DF) coupled through a polymeric dialdehyde starch (DAS) to MoAb, a very high sa 67Ga-DF-DAS-MoAb has been reported (1). However, high sensitivity IRMA calls for preparation of stable conjugate labeled under a condition avoiding the hydrolysis of high sa 67Ga. In this work, labeling of 67Ga-DF-DAS-MoAb was attempted by ligand exchange reaction. Purified and extracted as high sa 67Ga citrate was subjected to reaction with the conjugate. Thus radiolabeled conjugate, reached over 90% yield at DF/MoAb ratio 11.8, if proceeded at pH 7.4. Stability and sensitivity attainable by this 67Ga-DF-DAS-MoAb, was tested with commercially available hGH two-site IRMA kit. The assay using high sa 67Ga-DF-DAS-MoAb showed excellent linear correlation ( $r=0.99$ ) as well as good correlation with that of MoAb ( $r=0.91$ ) and reaching much higher sensitivity. Thus, potentiality of short-lived radiometallic nuclides for ultrasensitive IRMA was assessed; also it can hopefully contribute to decrease the radioactive waste problem.

1) J Nucl Med 32:825-829, 1991.