The results suggest the clinical usefulness of In-111 labeled 17-1A and 19-9 antibodies in the radioimmunodiagnosis of colon and gastric cancers.

Monoclonal antibodies 19-9 and 17-1A react with tumor associated antigens found on human colorectal and gastric and other carcinomas. F(ab')2 fragments of 19-9 and 17-1A were conjugated with DTPA and labeled with In-111. To evaluate the utility for radioimmunodetection, we studied the binding affinities of In-111 labeled 19-9 F(ab')2 and 17-1A F(ab')2 to human cancer tissues, compared with that of In-111 labeled control IgG F(ab')2 in vitro. In 33-85% of colorectal and gastric cancer tissues, In-111 19-9 F(ab')2 or 17-1A F(ab')2 showed the affinity more than 1.5 times as much as that of In-111 control IgG F(ab')2. Scintiphos of athymic mice xenografted human gastric cancer demonstrated tumor localization 8 hours after injection of In-111 19-9 F(ab')2. Biodistribution 72 hours after injection showed tumor/blood ratio of 45.8 and tumor/liver ratio of 1.37. These results indicated In-111 19-9 F(ab')2 and 17-1A F(ab')2 may be useful for radioimmunodiagnosis of human colorectal and gastric cancers.

To evaluate improved methods of radioimmunodetection, In-111 and I-125 labeled antibodies and fragments of antibody were compared. F(ab')2 and Fab of Anti-carcino-embryonic antigen antibody;284 (1g6) were radiolabeled. The labeling method of In-111 labeled MAb was conjugated with cDTPA, molar ratio of Ab:DTPA were 1:0.6–0.8 after purification. Radioiodination of MAb; Chloramine-T method, Iodo-Gen method and IODO-BEAD method were compared. These radiolabeled MAb were injected to tumor bearing nude mice. Tumor concentration, blood level and tumor/blood ratio were calculated. Blood clearance; T1/2 of In-111 Mab were Intact 5hrs, F(ab'), 20 hrs and Fab 13 hrs, these of I-125 Mab were Intact 77hrs, F(ab')2 37hrs and Fab 2hrs. Tumor/blood ratio of In-111 labeled antibodies were twice as I-125 labeled antibodies. The results of fragments on tumor/blood ratio were Fab > F(ab')2 > Intact in both radionuclides. In other organs, liver, kidney and spleen were showed high concentration by In-111 labeled antibodies.