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Evaluation of tumor targeting with radiolabeled F(ab')₂ fragment of a humanized monoclonal antibody

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Abstract:

Humanized monoclonal antibody U36 and its F(ab')₂ fragment, radio labeled with ¹²⁵I, were tested for tumor localization in nude mice bearing a squamous cell carcinoma xenograft line derived from a head and neck carcinoma. Monoclonal antibody IgG or F(ab')₂ fragment were injected in parallel and at days 1, 2 and 3, mice were dissected for determination of isotope biodistribution. IgG as well as F(ab')₂ showed highly specific localization in tumor tissue. The mean tumor uptake (n=3) is expressed as the percentage of the injected dose per gram of tumor tissue (%ID/g). %ID/g of IgG was 11.7% at day 1 and decreased to 10.9% at day 3 whereas %ID/g of F(ab')₂ was 2.9% at day 1 and decreased on following days. Tumor to blood ratios (T/B) at day 1 were 0.86 for IgG and 1.32 for F(ab')₂ and reached a maximum at day 3 with values of 4.41 and 1.84 respectively. These findings suggest that the superior tumor to non-tumor ratios in the day of 1 render the F(ab')₂ fragment more qualified for specific targeting radioisotopes to tumor xenografts in this experimental setting.

Keywords:

Humanized monoclonal antibody , F(ab')₂ fragment , I-125

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