Alasbimn Journal Year 14, Number 54, October 2011 = / A=F1o=20 14, N=BA 54, Octubre 2011
XXIII Congreso de = ALASBIMN:=20 Res=FAmenes.

Mass Influence of=20 DOTA-RITUXIMAB in the Radiolabelling with = LU-177.

Trabalho No. = 30
Apresenta=E7=E3o=20 P=F4ster
Autor Apresentador: Elaine Bortoleti de=20 Ara=FAjo
Outros-Autores: Adriana. V.F. Massicano; = Priscilla=20 B. Pujatti
Institui=E7=E3o: Nuclear and Energy = Research=20 Institute =F1 IPEN / CNEN
Pa=EDs: Brazil.

Introduction

Rituximab (Mabthera=AE) is an anti-CD20 monoclonal = antibody=20 (mAb) that has demonstrated efficacy in patients with = various=20 lymphoid malignancies, including indolent and = aggressive forms=20 of B-cell non-Hodgkin s lymphoma (NHL) and B-cell = chronic=20 lymphocytic leukaemia (CLL). With the aim of to = improve the=20 cytocidal effect of the monoclonals antibodies (mAbs), = was=20 introduced the radioimmunotherapy (RIT), where a = radioisotope=20 is coupled to a mAb. For labeling mAb with metal and=20 lanthanides radioisotopes, conjugation was previously = required=20 in order to introduce a chelating group (DOTA or DTPA) = in the=20 protein chain.

Objective

This work describes the conjugation and = radiolabelling of=20 DOTA-rituximab with lutetium-177 (177Lu), a = β-=20 emitter with optimal physical characteristics for RIT = of small=20 tumors and metastases.

Material and Methods

The conjugate was conducted using 10 mg of = rituximab=20 previously purified by ultrafiltration device and the = molar=20 rituximab:chelator ratio employed were 1:20 and 1:50. = The=20 reaction was conducted for 1 hour in 0.2 M phosphate = buffer pH=20 9.0, and gently mixing at room temperature and = remained=20 overnight under refrigeration. At the end of reaction, = two=20 aliquots of the reaction mixture were separated to = determine=20 the average number of chelators per mAb. Different =

mass of=20 conjugated antibody were radiolabelled with 148 MBq (4 = mCi) of=20 177LuCl3. The reaction was conducted in 0.4 M acetate = buffer=20 pH 5.5 for 1 hour at 43 =B0C. Radiochemical purity was = determined using analysis by HPLC and TLC-SG plates, = where 1=20 μL of the solution was eluted using 0.1 M=20 citrate/acetic acid buffer pH 5.0 as solvent.

Results and Discussion

The range of number of chelator per mAb was 1.27 - = 7.15 and=20 1.05 - 7.41 for molar ratio 1:20 and 1:50 = respectively.=20 Radiochemical purity above 95% were obtained when = radiolabeled=20 5 mg of conjugated antibody in molar ratio 1:50 with = 148 MBq=20 of lutetium-177 and this antibody was purified in = PD-10=20 column. Probably the largest number of chelators = coupled to=20 antibody molecule conferred greater radiochemical = purity.=20