P-310 Optimization of the labeling procedure of ^{188}Re(V)-DMSA

Reis, N.F. [1]; Dantas, D.M. [1;] Brambilla, T.P. [1] Osso Jr., J. A.[1]
1 Instituto de Pesquisas Energéticas e Nucleares - IPEN/CNEN-SP, Brazil

Objectives: The aim of this work was the optimization of the labeling of DMSA (dimercaptosuccinic acid) with ^{188}Re.

Methods: ^{188}Re was eluted from an ^{188}W - ^{188}Re generator (from POLATOM). The initial formulation used for the labeling of DMSA with ^{188}Re consisted of: 2.5mg of DMSA, 1.0mg of $SnCl_2.2H_2O$, 30mg of sodium oxalate and the pH was adjusted to about 5 with 37% HCl. After labeling, the solution was stirred and incubated for 15 min at room temperature. The variables studied in order to optimize the formulation and the method were mass of reducing agent (0.5mg, 1.0mg, 2.0mg), mass of sodium oxalate(5mg, 10mg, 20mg, 30mg), mass of DMSA(1.0mg, 2.5mg, 5.0mg), pH (5-4-3-2-1), reaction time (15 min-30min-60min-90min), volume of ^{188}Re (1mL, 2mL). Ciclodextrin was also added to the formulation, for a better conformation of the molecule.The radiochemical purity was determined using TLC-SG developed with two different solvent systems. Acetone was used in order to separate ReO_4^- (R_f 1) from ^{188}Re(V)-DMSA and ReO_2 (R_f 0) and 5% glycine was used in order to separate ReO_2 (R_f 0) from ^{188}Re(V)-DMSA and ReO_4^- (R_f 1).

Results: The ideal formulation and method was 2.5mg of DMSA, 1.00mg of $SnCl_2.2H_2O$, 10 mg of sodium oxalate, 10mg of ciclodextrin and the pH was adjusted to about 1 with 37% HCl. The solution was labeled with 2 ml of ^{188}Re, stirred and incubated for 30 minutes at room temperature. The radiopharmaceutical was stable at room temperature up to 6 hours (Figure 1).

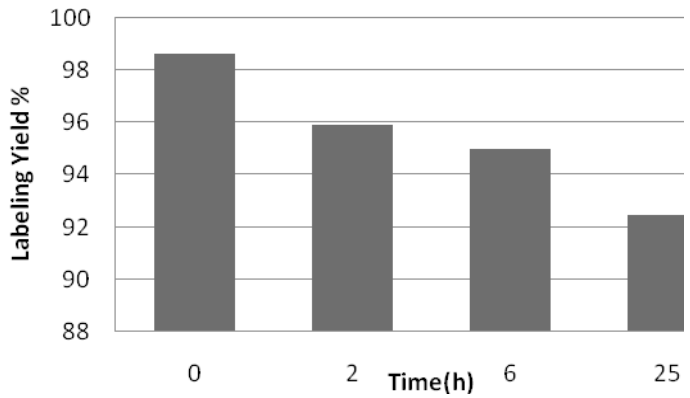

Figure 1. Stability of ^{188}Re(V)-DMSA

Conclusions: The results showed that the study of the variables achieved a formulation that can provide high labeling yields of ^{188}Re(V)-DMSA. Further studies are necessary concerning the *in vitro* and *in vivo* stability of the radiopharmaceutical.

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References: BOLZATI, C,; BOSCHI,A.; UCCELLI, L; DUATTI, A.; FRANCESCHINI, R,; An Alternative Approach to the Preparation of ^{188}Re Radiopharmaceuticals from Generator-Produced[$^{188}ReO_4$]$^-$: Efficient Synthesis of ^{188}Re(V) – mesmo-2,3- Dimercaptosuccinic Acid