

# **Labeling, in-Vitro Stability and Biological Distribution of $^{188}\text{Re}$ -Ethylenediamine–N,N,N,N-tetrakis (Methylene Phosphonic) Acid Complex**

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## **ABSTRACT**

Labeling of ethylenediamine–N,N,N,N-tetrakis (methylene phosphonic) acid (EDTMP) with rhenium-188 was investigated. Stannous chloride was used as a reducing agent for the reduction of  $^{188}\text{ReO}_4^-$ . Dependence of the yield of  $^{188}\text{Re}$ -EDTMP complex upon the concentration of EDTMP, tin(II) content, reaction time, amount of antioxidant, pH, reaction temperature and adding of carrier was examined. The optimum condition that gives high labeling yield of  $^{188}\text{Re}$ -EDTMP complex (95.8% with carrier-free rhenium and 97% with carrier- added rhenium) was achieved using 40mg EDTMP, 0.8mg Sn(II), pH = 0.8, reaction temperature 100°C and 5 min reaction time. The amount of carrier added equal to 200 $\mu\text{g}$   $\text{KReO}_4$ . Furthermore,  $^{188}\text{Re}$ -EDTMP complex prepared at 100°C is more stable than that prepared at 30°C and the carrier added  $^{188}\text{Re}$ -EDTMP complex is more stable than the no carrier added complex.

***Key Words: Rhenium-188/ EDTMP/ Stability/ Bone Uptake***