

## CHAPTER V

### CONCLUSION

The ligand, S-Bz-MAG<sub>3</sub> was synthesized following Brandau (1988) method. All synthesized compounds were characterized spectrometrically and believed to be the desired ligand. The complexation kit of this ligand with technetium was performed successfully by using the optimized condition as following:

1 mg of S-Bz-MAG<sub>3</sub>  
60 µg of SnCl<sub>2</sub>.2H<sub>2</sub>O  
20 mg of Sodiumgluconate  
at pH 5.5

The kit gave the highest radiochemical purity at 30 minutes after complexation. The radiochemical purity was obtained higher than 90 % with the same order as commercial kit. The optimization of developed paper chromatography was to use whatman paper number 1 (1 cm x 15 cm) by 65:35 acetonitrile : water. This method when compared with previous method gave the same data but more rapid.

The possibility of Cu(II) complexing with MAG<sub>3</sub> was investigated by using potentiometric titration and UV/visible spectroscopy technique as Job's method, mole ratio and slope ratio. The experiment indicated 1:1

complex for Cu:MAG<sub>3</sub> at pH 12. The formation constant calculated from SUPERQUAD calculation for refinement model ML(OH)<sub>2</sub> and ML(OH)<sub>4</sub> are  $18.71 \pm 0.11$  and  $26.68 \pm 0.16$  respectively. The proposed complexes are [CuMAG<sub>3</sub>(OH)]<sup>1-</sup> and [CuMAG<sub>3</sub>]<sup>3-</sup>.

The species distribution study had proven the binding possibility of Cu(II) to MAG<sub>3</sub> at the pH 7 to 7.5 which is the working range of the radiopharmaceutical. At 30 minutes the radiochemical purity of <sup>99m</sup>Tc-MAG<sub>3</sub> in present of Cu(II) ion from 90 to 900 µg were decreased from 5 to 15% respectively. All quantities of Cu(II) present in <sup>99m</sup>Tc-MAG<sub>3</sub> show increasing negative slope of this radiochemical purity against time. Influence of Cu(II) on the complex of Technetium-99m-MAG<sub>3</sub> can reduce efficiency and safety of the radiopharmaceutical in expecting design.

Owing to the influence, if Technetium-99 is available in gram, the formation constant of mix metals should also be determined by the same method as described in this work. The result will indicate more information of the influence from Cu(II) ion, thus the prevention could be designed more effectively.