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The preparation and biological behaviour of $^{99m}$TcN-tropolone is described. This complex was found to be more lipophilic than the $^{99m}$Tc-tropolone complexes obtained using stannous chloride as a reducing agent and when injected i.v. into mice was found to label blood cells. The agent may have potential as a blood cell labelling agent.

INTRODUCTION

The non-benzenoid aromatic 2-hydroxy-2,4,6-cycloheptatrienone /tropolone/ has found limited use as a chelating agent in analytical chemistry. It has had some application in nuclear medicine as a platelet labelling agent when co-ordinated to indium-111.

Reports of technetium complexes of the chelate have been rare, but recently Spitznagle reported the preparation and whole body distribution studies of a $^{99m}$Tc-tropolone complex prepared using stannous chloride as the reducing agent. Preparation of this complex required solvent extraction and subsequent evaporation and dissolution of
the complex formed. Recently, we described a method for preparing $^{99m}$Tc-complexes containing a Tc-nitrido-group based on substitution reactions of $^{99m}$TcNCI$_4$ /Ref. 4/. Since the biological behaviour of $^{99m}$Tc-complexes has been shown to be altered by the presence of the nitrido group, we have studied the preparation and biological behaviour in mice of the $^{99m}$TcN-tropolone complex prepared using $^{99m}$TcNCI$_4$. In addition, we have also investigated a $^{99m}$Tc-tropolone complex prepared by stannous chloride reduction without the solvent extraction step used by Spitznagel. This preparation showed different biological behaviour to that reported by Spitznagel and is also reported here.

EXPERIMENTAL

Chemicals

Tropolone was obtained from Fluka AG. All other chemicals and solvents were of analytical grade.

Preparation of $^{99m}$Tc-radiopharmaceuticals

A stock solution of tropolone /5 mg ml$^{-1}$/ was prepared by wetting the solid tropolone with ethanol and dissolving in distilled water. Stannous chloride solution /5 mg ml$^{-1}$/ was prepared by dissolving the dihydrate in 0.1M hydrochloric acid. Both solutions were freshly prepared and membrane filtered prior to use. $^{99m}$Tc/Sn/ - tropolone: 0.2 ml $^{99m}$Tc-pertechnetate /20 mCi/ was added to 1 ml tropolone solution. On adding 0.1 ml stannous chloride solution, a milky yellow precipitate formed. This precipitate dissolved upon adding 2 ml water and adjusting the pH to 5.5. The resulting