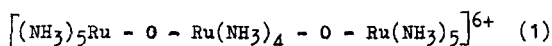


PREPARATION OF RADIOACTIVE (^{103}Ru) RUTHENIUM RED

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The ruthenium red cation is a complex of ruthenium with ammonia in which there are two oxo-bridges:



Its chloride form is widely used in histochemical studies because its selective reaction with mucopolysaccharides (2)(3). On this basis, the availability of a radioruthenium labelled complex is of significant value for the investigation of that type of interaction.

The labelled ruthenium red was prepared as follows: 1 mCi $^{103}\text{RuCl}_3$ (1.55 mg of Ru in 4 N HCl) was brought to 0.25 N HCl in a volume of 10 ml, and was reduced to Ru^{III} by 2 hours refluxing with 2 ml of ethyl alcohol. The solution was transferred to a rotative flash-evaporator heated in a water-bath at 60°C and evaporated to approximately a half of its original volume. By rotating the evaporator under normal atmospheric pressure after adding 10 mg of ruthenium red dissolved in 10 ml of water, plus 5 ml of concentrated ammonia (d:0.88) to the solution kept at 90°C , the ^{103}Ru chloride was oxidized to the ruthenium red complex. To avoid complete evaporation 1-2 ml of ammonia were added frequently. After this, the solution was evaporated under vacuum to dryness. The formed ammonium chloride and the non-reacted ruthenium chloride were extracted five times with hot 96 % ethyl alcohol. The insoluble ^{103}Ru -labelled ruthenium red (70-85 % of the original ^{103}Ru) was dissolved in water, and filtered through a Millipore membrane filter (pore size: 0.22μ).

The purity of this preparation was assayed by ascending chromatography on silica gel plates using 96% ethyl alcohol:0.1 M ammonium acetate buffer, pH 4.6 (4:1) as solvent. Under these experimental conditions ruthenium red does not migrate while ruthenium chloride does. As shown in figure 1, ^{103}Ru chloride exhibits several moieties presumably polynuclear aquochloro-complexes (1). The analytical results indicate that 98-99 % of the radioactivity was as ruthenium red.

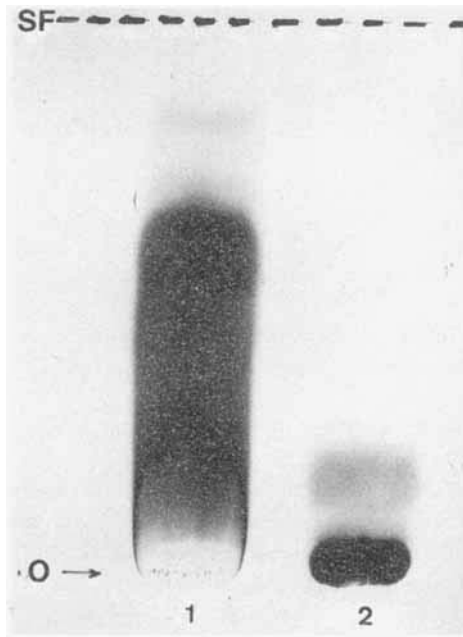


Figure 1. Autoradiography corresponding to the thin-layer chromatography of ^{103}Ru -ruthenium chloride (1) and ^{103}Ru -ruthenium red (2) - O:origin and SF: solvent front.

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