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Preparation of ^{131}I-labelled Bengal Rose

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Radio-iodine labelled Bengal Rose is used for investigating the functioning of the liver. A large number of methods have been published for preparing this material [1–11], but in no case does the radiochemical yield exceed 90%. In itself the loss of ten percent of the radioiodine is not a serious matter, but under these circumstances the reaction product contains an appreciable amount of radio-iodine in the form of undesirable chemical compounds (mainly iodide).

This means, that extensive purification is required before use. For this reason we have studied the influence of variations in the experimental conditions of exchange: solvent (water and ethanol), p_H, temperature, duration of exchange and illumination. The following method was found to give the best results:

The reaction is performed in a 15 or 20 ml centrifuge tube with a ground stopper. In 5 ml of 96% ethanol containing 100 mg of Bengal Rose the p_H is adjusted to 4.0 ± 0.2 using a Beckman glass electrode. Two drops of H_2O_2 (30%) and 10–30 millicuries of ^{131}I (free of carrier and reductant) are added. The mixture is heated in a 55 °C waterbath for one hour. After cooling one drop of 0.1 M thiosulphate is added. Bengal Rose is now precipitated with HCl and redissolved. If this method is followed the radiochemical yield is 99%, which means that subsequent purification is not required. The fact that not more than one percent of the radio-iodine is present in the inorganic form in the final product was demonstrated both by paper chromatography with a citrate buffer at p_H = 7.0 [12] (Rf. Bengal Rose 0.0, Rf. iodide 0.9) and by thin layer chromatography on silicagel (250 μ) containing 2% polyvinylalcohol with butylacetate: acetic acid (9:1) (Rf. Bengal Rose 0.96–1.0; Rf. iodide 0.0).

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1. R. HENRY, D. DEBUCHY and E. JUNOD, Rapport CEA No. 1784 (1960).
2. M. TUBIS, Personal Comunication (1962).
3. R. MORREAU, H. RENAULT and A. LEMONIER, Bull. Soc. Chim. France 11/12, 1535 (1958).
4. J. LIEBSTER and O. ANDRYSEK, Nature 913 (1959).
5. R. ROLKTAL, Science Soc. **66**, 163 (1950)
6. A. E. A. MITTA and L. L. CAMIN, Informe No. 162 CNEA (1964).
7. R. S.MANI, Indian J. Chem. **5**, 219 (1967).
8. E. HALLABA and M. RAICH, Int. J. Appl. Rad. Isotopes **18**, 533 (1967).
9. P. RABAN and W. GREGORA, Chemicke Zvesti **21**, 586 (1967).
10. TENG-YUCH CHEU and SI-YUNG YEH, J. Chin. Chem. Soc. **11**, 94 (1964).
11. C. N. DENSI and M. HEGESIPPE, Int. J. App. Rad. Isotopes **19**, 153 (1968).
12. I. COHEN, CEA France 2150 (1962).
13. A. E. A. MITTA, L. L. CAMIN and M. L. P. DE TROPAREVSKY, Radiochim. Acta **6**, 111/112 (1968).