NOTE

Tritium - labelled Chloroaluminium Phthalocyanine

M. Shimoni[a], I. Rosenthal[b] and E. Ben-Hur[c]

[a]Department of Radiochemistry and [c]Department of Radiobiology, Nuclear Research Center-Negev, P.O.Box 9001, Beer-Sheva, Israel, [b]Department of Food Technology, A.R.O., Volcani Center, P.O.Box 6, Bet-Dagan 50250, Israel.

Tetrasulfonated copper phthalocyanine was reported to be preferentially uptaken in experimentally produced intracranial neoplasms in mice as compared with normal tissue (1). Similarly, uranyl tetrasulfophthalocyanine was shown to accumulate selectively in brain tumors (2). We have recently found that chloroaluminium phthalocyanine (CAPC) sensitize the photokilling of cultured Chinese hamster cells, an observation which suggests this compound as a candidate for cancer phototherapy (3). The extension of this preliminary finding to tissue distribution studies and more detailed mechanistic tests, required the use of a radioactive labelled compound (4).

[^{3}H] CAPC was obtained by subjecting a sample of CAPC to random tritium labelling *via* catalytic exchange. The CAPC (20 mg) (Eastman Kodak Co., Laser Grade), purified as described (5), was dissolved in a mixture of dioxane (1.5 ml) and dimethylformamide (0.2 ml) which contained catalysts, PdO (10 mg) (Ventron) and PtO_2 (10 mg) (Koch and Light Co.). The solution was treated with tritium gas (25 Ci) for 45 min , at room temperature, with continuous stirring. Subsequently the solvent was removed by vacuum and the residue taken up in methanol and dried. A final dissolution in methanol was followed by filtration for catalyst removal. The product was purified on preparative TLC plates (20x20 cm) covered with Silicagel, GF254 (Merck Co.) by an ethanol : benzene (9:1) solvent system. The [^{3}H] CAPC was eluted from the plate by two extractions with absolute ethanol. The purity of the final product was assessed by comparison of

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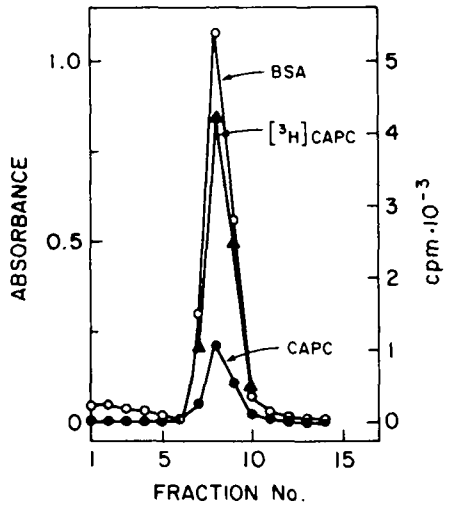

Fig. 1. Profile of gel filtration on Sephadex G-25 of BSA and [^{3}H] CAPC. BSA absorbance at 280 nm (O), CAPC absorbance at 674 nm (●), radioactivity of [^{3}H] CAPC in cpm (▲).

the absorption spectrum with an authentic, cold, specimen. The specific activity of the resulted [^{3}H] CAPC was 0.7 Ci/m mole.

The formation of a complex between CAPC and bovine serum albumin (BSA) was studied using [^{3}H] CAPC thus synthesised. A solution (1ml) of BSA (1%) and CAPC (50 uM, 0.1 uCi/ml) in water was applied on the top of a Sephadex G-25 column (1.5x20 cm), and eluted with water. Fractions of 2 ml were collected and the absorbance was measured at 280 nm for protein and at 674 nm for CAPC. The radioactivity in each fraction was determined in a liquid scintillation spectrometer. The results (Fig.1) show that a fraction of CAPC coeluted with BSA, indicating the formation of a tight complex. Assuming no change of the original CAPC extinction coefficient at 674 nm, ca. 15% of the initial CAPC coeluted with BSA. However, radioactivity measurements indicated the complexation of ca. 27% CAPC. Consequently, it results that this binding

modifies the absorption spectrum of CAPC causing a reduction in the extinction coefficient at 674 nm by a factor of 1.8. The $[^{3}H]$CAPC is currently employed to follow the uptake of CAPC into mammalian cells and its localization within the cell.

References

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