

Estimation of Whole Body Absorbed Dose of the Patient Administered ^{57}Co -Bleomycin for Tumor Diagnosis

I. ANZAI

*Department of Radiological Health, Faculty of Medicine,
University of Tokyo, Tokyo, Japan*

M. KANNO, H. TOBARI and T. HIGASHI

Department of Radiology, Kanagawa Dental College, Yokosaka, Japan

^{57}Co -Bleomycin is an anticancer agent which has recently been put into clinical use for tumor diagnosis. Intravenous administration of 0.5 mCi of ^{57}Co -Bleomycin was reported to yield an effective scanning image of tumor tissue, especially in case of lung cancer. The authors attempted to evaluate the whole body absorbed dose, being based on the excretion data actually obtained for the patients submitted to the clinical diagnosis.

The average whole body absorbed dose D (rads) delivered by q mCi of ^{57}Co -Bleomycin can be calculated by the following formulae;

$$D = q(\text{mCi}) \times 3.7 \times 10^7 (\text{dps/mCi}) \\ \times 60^2 (\text{sec/h}) \times 24 (\text{h/day}) \\ \times \epsilon (\text{MeV/decay}) \times 1.602 \times 10^{-6} (\text{erg/MeV}) \\ \times \int_0^{\infty} \left\{ f_1 \exp\left(-\frac{0.693}{T_1} t\right) + f_2 \exp\left(-\frac{0.693}{T_2} t\right) \right\}$$

$$\frac{dt}{W(\text{g})} \times 100 (\text{erg/g rad}) \\ = 7.39 \times 10^4 (f_1 T_1 + f_2 T_2) \frac{q \times \epsilon}{W} \quad (\text{rads})$$

where

ϵ : effective energy absorbed in the whole body per disintegration of ^{57}Co (MeV/decay)

W : mass of the body (g)

f_1, f_2 : fractions in the rapid and slow phases respectively

T_1, T_2 : effective half-lives in the rapid and slow phases.

Substituting 70kg for W , the whole body absorbed dose delivered by the administration of 1 mCi of ^{57}Co -Bleomycin becomes 750 mrad.

Experimental Studies on the Distribution and Excretion of ^{169}Yb citrate

E. OGAWA

Department of Pharmacology, School of Medicine, Gunma University, Maebashi

Since Hisada *et al* (1972) used ^{169}Yb -citrate for the diagnosis of malignant tumor, many

replications have been performed concerning it. The authors, who had carried out experimental