LETTER

A SIMPLIFIED METHOD FOR DETERMINATION OF BLOOD CORTICOIDS USING *IN VITRO* RESIN SPONGE UPTAKE OF ³H-PREDNISOLONE

To the Editors:

The authors previously reported that the determination of ³H-prednisolone resin uptake could be a new adrenal function test (Nakajima *et al.*, 1968). The principle of the method is similar to that of the ¹³¹I-triiodothyronine resin uptake for the thyroid function test (Michell, 1958; Michell *et al.*, 1960). The *in vitro* ³H-prednisolone resin uptake was determined by adding radioactive prednisolone and Amberlite CG 400 Type 1 to the test serum, then by incubating the mixture, and finally by comparing the radioactivity of the supernatant before and after the addition of the resin. Changes in the values obtained by this method were similar to changes in plasma corticoid level in other adrenal function tests such as detection of adrenal circadian rhythm, corticotrophin (ACTH) test, dexamethasone suppression test and adrenal response to lysine-8-vasopressin. Thus this method proved to be a sensitive adrenocortical test regarding cortisol secretion.

Recently the authors found that instead of the original resin (Amberlite CG 400 Type 1) resin sponge for Triosorb Test (Abbott laboratory) was available to the ³H-prednisolone resin uptake method when some modifications were applied to the original method. The modifications are 1) preparing the ³H-prednisolone solution to make the concentration of prednisolone 0.16 μ g/ml, 2) changing the volume ratio of the serum-³H-prednisolone mixture to 1.0 ml/1.0 ml, and 3) changing the incubation time of the mixture to 120 mins. instead of 90 mins.

Figure 1 shows the modified method of the

$$\text{Resin Sponge Uptake (\%)} = \left(1 - \frac{\text{Counts of B}}{\text{Counts of A}}\right) \times 100$$

Fig. 1. Procedures for the determination of ³H-prednisolone resin sponge uptake.

determination of ³H-prednisolone resin uptake using the resin sponge (Abbott laboratory). Essentially the principle of this modified method is the same as that of the original method. Figure 2 shows the correlation between values obtained by the modified method and those obtained by the original method. A very good correlation was found between the two groups of values. Mean basal value of the normal adults is 29.0 ± 5.6 (SD) %. This value is somewhat lower than that obtained by the original method.

Fig. 2. Correlation between ^3H -prednisolone resin uptake and ^3H -prednisolone resin sponge uptake.

When the resin sponge (Abbott laboratory) is used, it is not necessary to shake the tube

which contains the resin and the serum- ^3H -prednisolone mixture and to centrifugalize the mixture although these procedures are necessary in the original method. Thus the new method is very convenient and time-saving.

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