The Influence by the Difference of the Experimental Condition to the PVA Sponge Test

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We have found a way of making a diagnosis of thyroid functions by making T_3-^{131}I stick fast to the PVA sponge. We got the adsorption of the PVA sponge incubated in T_3-^{131}I physiological solution of sodium chloride (1 ml) and serum. This sponge is a cylinder with a diameter of 0.9 cm and a length of 1.5 cm.

Concerning the Incubation Time

The incubation time of the PVA sponge in T_3-^{131}I physiological solution of sodium chloride (1 ml) and serum (1 ml) was changed from 20 minutes to 120 minutes. As the result we chose 60 minutes as an experimentally convenient time with the bast error.

The quantity of serum

In case of T_3-^{131}I physiological solution of sodium chloride (1 ml) and incubation time (60 minutes) the quantity of serum was changed from 0.3 ml to 1.5 ml. As the result we chose 1 ml as an experimentally convenient quantity with the bast error

The Incubation temperature

Adhesion rate was increased in proportion to the rise of temperature. But as the increase of adhesion rate was directly in proportion to the rise of temperature, the correction of the value was possible.

Weight of T_3

The test gives right result if we use ordinary T_3-^{131}I solution. But when the weight of T_3 was more than $\frac{1}{2} \times 10^{-4}$ mg, adhesion rate was increased.

The influence of PH and sodium iodile

The test gives right result if the PH of T_3-^{131}I physiological solution of sodium chloride is from pH 4.0 to pH 9.5. And moreover the test wasn't disturbed by coexisting with sodium iodide which was less than 1 mg.

In view of the results so far achieved, we can have the same result whenever PVA sponge is incubated in the ordinary T_3-^{131}I physiological solution of sodium chloride and serum (1 ml) for 60 minutes, and T_3-test is possible for clinical use, we think.

Use of PVA Sponge Which Absorbed T_3-^{131}I

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The thyroid function test by using triiodothyronine-^{131}I and resine-sponge shows the excellent results, and is adopted in many hospitals.

We found that not only resin-sponge but also semiformalized polyvinyl alcohol sponge (PVF) absorbs T_3 and for the purpose of making the T_3-^{131}I test simpler, we tried it by using 65% semiformalized and 72% semiformalized PVA sponges absorbed T_3-^{131}I beforehand.

In this experiment we used pooled human serum and had the following results:

(1) Remaining rate of T_3-^{131}I in PVF changes by less than 1% per 10 minutes in case incubation time is more than 60 minutes, and by less than 1% per 0.1 ml in case the quantity of serum is more than 0.8 ml. As to temperature, we need not correct it when it is room tempera-

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