Studies on the Detoxicating Hormone of the Liver (Yakriton).

46th Report.

Effect of Yakriton* to Counteract Heart Dilatation. Preliminary Report.

By

AKIRA SATO.

(佐藤 彰)

*(From the Department of Pediatrics, Faculty of Medicine,
The Tohoku Imperial University, Sendai.
Director: Prof. A. Sato.)*

Since my isolation of yakriton, the detoxicating hormone of the liver, it has been used clinically on a large number of patients. When it was used in chronic cases of young patients, it was not seldom noticed roentgenologically that the heart became slightly smaller after continuous use of yakriton for some time. We have not yet treated a case of clinical diagnosis of "enlarged heart." But we have wanted to try animal experiments to see whether yakriton will exert such an effect as to counteract a dilatation of the heart.

Method of Experimentation.

Distilled water was frequently injected into the heart of normal rabbits in the amount of 10 c.c. per kilo of body weight. The injection was performed every day, though not oftener than once a day. Yakriton was injected subcutaneously in different amounts, from $\frac{1}{3}$ – $\frac{1}{2}$ R.A.U. per kilo of body weight, only with the following difference. In some animals yakriton was used whenever the intracardial injection of distilled water was used, while in other animals it was used only occasionally. Rabbits were fed on tofukara§ alone.

* Throughout the work, insoluble or emulsified yakriton was used.

§ Tofukara: Tofu is a food made from soy beans, thus a kind of bean curd, and kara is the refuse left over from the beans; these are swollen in water, then ground and pressed (after Tashiro, Tohoku J. Exp. Med., 1925, 6, 602).

Result of Experiment.

The result of the experiment will be best shown by the accompanying pictures (Cf. Pictures 1 & 2). The weight of the normal rab-

Picture 1.

↑
Normal-sized
heart of yakriton animal
(No. 3931 rabbit;
weight of heart, 9 grms.)

↑
Colossal heart
experimentally produced
(No. 3933 rabbit;
weight of heart, 44 grms.)

Picture 2.

↑
Almost normal-sized
heart of yakriton animal
(No. 3921 rabbit;
weight of heart, 16 grms.)

↑
Colossal heart
experimentally produced
(No. 3920 rabbit;
weight of heart, 63 grms.)

bit heart seems to be subject to a considerable individual range of difference. Even in the adult rabbits which happened to die in our laboratory for some cause or other during the period in which I tried the above experiment, the hearts differed in weight from 5 to 15 grms.

The heart of No. 3921 rabbit in the table (Cf. Table), which weighed 16 grms, was probably enlarged to a certain degree. But the enlargement was nothing when compared with that of No. 3920 rabbit in the table, in which the weight of the heart was 63 grms, thus 4 times as large as in the case of that yakriton animal (No. 3921 rabbit). The difference between the control and the yakriton rabbits was more remarkable in the other group in the table, because the enlargement of the heart in No. 3933 animal was 5 times as heavy as in No. 3931 animal.

TABLE.

Successfully produced colossal hearts of control rabbits, and hearts of yakriton animals successfully prevented from cardiac enlargement. Explanation to Pictures 1 and 2.

	Control (No. 3933 rabbit)	Yakriton (No. 3931 rabbit)	Control (No. 3920 rabbit)	Yakriton (No. 3921 rabbit)
Intracardial injection of water (10 c.c. per kilo of body weight)	19 times (dead)	19 times (killed)	23 times (dead)	23 times (killed)
R.A.U. of yak- riton per kilo of body weight	0	$\frac{1}{2}$ R.A.U. per kilo. Use of yakriton on the 1st day of experiment, then on every 4th day	0	0.3 R.A.U. per kilo. Use of yakriton every day except on the 7th and the 13th day of the experiment
Weight of the heart, when dead or killed	44 grms.	9 grms.	63 grms.	16 grms.

As has been shown by this experiment, it is now clear that yakriton, the detoxicating hormone of the liver, will counteract a pathological enlargement of the heart. Yakriton may be regarded as a heart remedy in such respect.

As to the mode of use of yakriton, it is still too premature to say anything definite. The experiment of daily intracardial injection of 10 c.c. water is not an easy one, because, in the course of the daily repeated intracardial injection, sudden death may occur at any time before any enlargement of the heart may be seen. Besides, it is very

difficult, nay almost impossible, to select the same site of the heart for each intracardial injection of water.

As to the appropriate amount and appropriate use of yakriton for the purpose of counteracting heart dilatation, it will be a subject of future investigation. In the present paper only the possibility is actualized that yakriton, the detoxicating hormone of the liver, can counteract materially an enlargement of the heart experimentally produced.

Summary.

A method of producing a colossal heart in the rabbit is described. An adequate use of yakriton will counteract an enlargement of the heart and, not only prevent the production of the colossal heart, but also make the heart retain its normal size.

Conclusion.

Yakriton, the detoxicating hormone of the liver, can counteract a dilatation of the heart and is thus a heart remedy in this sense.