The combined evidence given above has enabled us to assign the structure V to constictic acid. Although the structure V is identical with the structure of salazinic acid β-methyl ether proposed by Asahina and Tsukamoto in 1935,[6] we were able to identify both samples only by TLC comparison. In agreement with Professor Asahina, we wish to keep the name constictic acid for the compound possessing the structure V.

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6) Y. Asahina and C. Tsukamoto, *Yakugaku Zasshi*, **55**, 1107 (1935).

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Behaviour of Plasma Sugars after Oral Administration of Lactose

Disaccharide tolerance tests have been performed in order to find the deficiency of digestive capacity of the small intestine. Judgement of the tests has been done only by examining the degree of blood glucose rise. However, if the concentration of disaccharides in blood is known, it will be resulted in obtaining more detailed information about their metabolism which must be useful for clinical biochemistry. As disaccharides in blood after oral administration have never been determined owing to their low concentration, we have realized this to get the following results.

Volunteers aged from 23 to 33 years and generally in good health were fasted for 12 hr except for one subject D (4 months old, 6 hr starvation). Oral tolerance tests were performed by administering them either 50 g disaccharide (lactose, maltose or sucrose) in 160—290 ml of water or 2 g lactose per kg body weight in 250 ml of water.

Blood was drawn from arm vein at 30 min intervals for 2.5 hr. Urine was collected at 30 min intervals for 3 hr and at 1 hr intervals for additional 1—7 hr. Blood plasma was prepared by adding NaF to the blood (10 mg per ml). The deproteinization was carried out at 75% ethanol concentration. Urine was incubated with urease for 30 min at 45° to decompose urea. The deproteinized plasma or the urea-free urine was deionized by passing through columns of Amberlite CG-120 (H^+) and Amberlite CG-4B (CH_3COO^-).

Gas chromatographic analysis of monosaccharides was carried out after Imanari, *et al.*[1] with a modification in which N,N-dimethylformamide was used as a solvent instead of ethyl acetate. Disaccharides were analyzed by the previous method.[2]

1) T. Imanari, Y. Arakawa and Z. Tamura, *Chem. Pharm.Bull.* (Tokyo), **17**, 1967 (1969).
2) H. Nakamura and Z. Tamura, *Chem. Pharm. Bull.* (Tokyo), **18**, 2314 (1970).

As shown in Fig. 1a, the blood lactose rise was observed in all adult subjects. The change of the blood lactose tended to be reversal to that of the blood glucose (Fig. 1b); the blood glucose of subject A who appealed no subjective symptoms during lactose tolerance test was almost not changed, while the blood lactose was markedly increased, which led to an increased lactose excretion in urine (Fig. 2a). On the other hand, with subject D of 4 months old, the blood glucose rise was distinct, while the blood lactose was almost unchanged. An increasing blood lactose and a delayed lactose excretion in urine were observed (Fig. 2a) with subject C who had diarrhea about 1.5 hr after the lactose loading. The lactose concentration in blood during lactose tolerance test was less than 10 μg/ml in all cases, and the excretion of lactose in 24 hr urine was less than 1% of the lactose taken (subject A: 1%, B: 0.03%, C: 0.3%).

The concentration of maltose or sucrose in blood after their tolerance tests was also less than 10 μg/ml.

From the data in Figures 1 and 2, it seems that the measurement of lactose excreted in urine would be a more practical test for the lactose intolerance than the usual measurement of blood glucose.

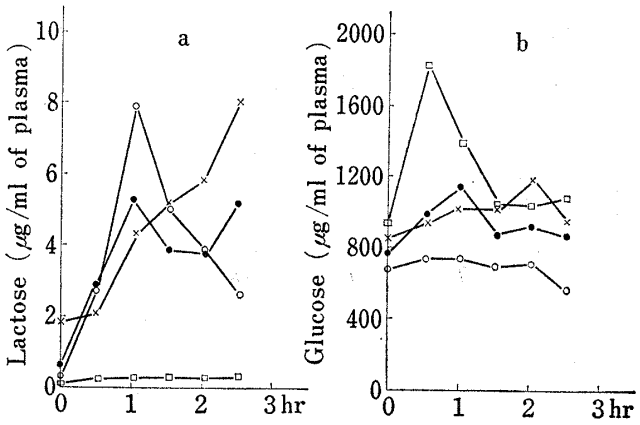

Fig. 1. Concentration of Blood Lactose (a) and Glucose (b) during Lactose Tolerance Test

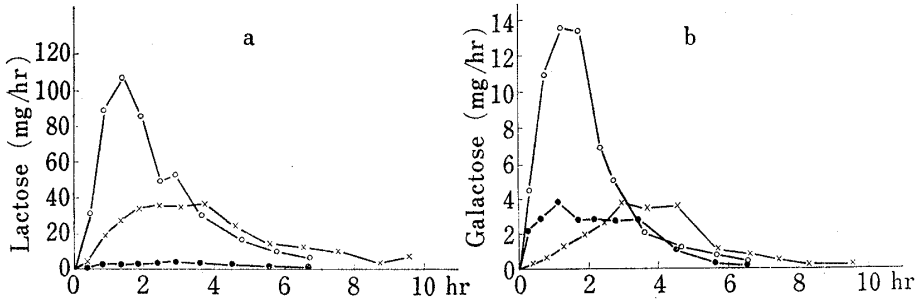

Fig. 2. Excretions of Lactose (a) and Galactose (b) in Urine
Conditions and Symbols are same as in Fig. 1

Accumulation of data on the changes in the concentration of disaccharides in blood after oral administration of disaccharides would, in combination with the examination of sugar excretion in urine, serve as a valid aid for understanding the more detailed physiological aspect of so-called "membrane digestion".

The work is under continuation and the details will be presented in the near future.

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