1. On principles of the diet for diabetics

As written in the booklet "Food-exchange-list for the treatment of diabetes mellitus", edited by the Japan Diabetic Society, restriction of calories and restriction of carbohydrate are both adopted as two of the principles in the dietetic treatment of diabetes. However, now in Japan, many diabetics have more interest in the restriction of carbohydrate and neglect somewhat the principle of restricting calories. They use saccharine for taste and restrict the amount of rice in the diet, but take a number of side dishes. Although caloric restriction in the diet for diabetics has had the unanimous consent of all specialists in diabetes from Bouchardat to today and obesity is generally recognized as the most important precipitating agent in the pathogenesis of diabetes, increase of the plasma immuno-reactive insulin (IRI) in the fasting state and increased response of the plasma IRI after glucose loading of obese people have recently been reported by several investigators (Kipnis et al., Kreisberg et al., Kosaka et al., and others), and these phenomena are equally understood by them as compensation for the increased insulin demand in the obese. From this point of view, restriction of calories cannot be overemphasized in the diet therapy of diabetes. I present a case of an adult-onset diabetic who needed 16 units of NPH a day at the beginning of the treatment and, with weight reduction, recovered almost normal glucose tolerance in 4 years. It has been recently shown that there are other stimuli than hyperglycemia to stimulate insulin secretion; increase of the plasma IRI in the obese or in carbohydrate restricted animals is not always accompanied by hyperglycemia; the highest value of the plasma IRI of the human in the diurnal rhythm is often seen according to Lambert and Hoet during the middle of the night when the hyperglycemia does not exist. Thus, if the β-cells of islets should be exhausted by the strong stimulus, the cause would not necessarily be hyperglycemia. Microangiopathy and slight diabetic abnormality of metabolism which seem to be due to insufficiency of insulin activity are already seen in prediabetes, which is characterized by having no gross abnormality of carbohydrate tolerance test; prevalence of diabetes decreases always in the countries where the shortage of food occur during war. Since the shortage of foods is always accompanied by an abundance of starchy foods, it is not understandable that the exhaustion of the β-cells in diabetics is brought about by hyperglycemia. The famous experiment of Lukens and Dohan who produced diabetes experimentally in cats with continuous injection of glucose intraperitoneally is generally recognized as most difficult to reconfirm. We
observed no increase of insulin doses in 4-7 years treatment of 15 labile diabetics, whose blood sugar values were believed to be at a distinctly high levels for a long time. From these facts it is concluded that hyperglycemia stimulates the secretion of insulin, but there is no evidence to show that the exhaustion of the β-cells is caused by hyperglycemia. And, since a more rapid and more marked increase of blood sugar is not necessarily seen after the administration of sugar or glucose than after the administration of starch, there seems to be no reason to restrict among three foodstuffs only carbohydrate, especially sugar intake in the diet for diabetics. It may be better if one adopts the restriction of calories as the only principle in the diet for diabetics.

2. On prescription of diet for diabetics

Though the American's ordinary food contains 40-45% carbohydrate, 15-20% protein and 35-40% fat, that of the Japanese contains 72% carbohydrate, 14% protein and 14% fat (from the report of the Japanese Ministry of Health and Welfare in 1964). This marked difference shows the wide adaptability of the human being to changes in the daily nutrient intake. Therefore, it cannot be rational that each amount of protein, fat and carbohydrate in the diet for diabetics is precisely prescribed. It makes it, I believe, unnecessarily difficult to prepare the diet. It is advisable that the amount of calories for the individual patient is divided into calories of the basic diet (1,200 cal.) which contain necessary amount of carbohydrate, protein, fat, vitamins and minerals to the mean size of Japanese and additional calories, and, though foods in the basic diet ought to be exchanged with foods in the same table to which the food in question belongs, foods of additional calories can be chosen freely through the all tables at each individual patient's choice. It is most important that restrictions which make it difficult to prepare the diet are avoided as much as possible.

3. On unsaturated fatty acids and sugar in the diet for diabetics

Although unsaturated fatty acids are believed to lower the plasma lipids, the use of unsaturated fatty acids in the diet for diabetics is not yet generally recommended as a means to prevent the atherosclerosis. It has also recently been reported that sugar augments the plasma lipids. According to Kinsell et al., a high sugar diet cannot cause hyperlipemia, if the total calories do not exceed a definite level. Accordingly, I think that a small amount of sugar can be used in the diet for diabetics.