

MS01-2 Chronotherapy of diabetes

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Both insulin secretion by pancreatic β cells and insulin sensitivity in the insulin-target organs exhibit daily rhythmicity, which may be involved in maintaining homeostasis of glucose metabolism. Because these rhythms are impaired in patients with diabetes, the correction of these abnormalities is necessary for effective treatment.

At present, there are few studies showing chronotherapy of insulin sensitizers (thiazolidinediones and biguanides). On the other hand, several classes of medications which are used for the treatment of impaired insulin secretion, including glinides and rapid- and long-acting insulin analogues, have the merit of chronotherapeutic approach. These medications are useful not only for improving glycemic control, but for the risk reduction of prolonged hypoglycemia and body weight gain.

Recently, we showed that circadian clock is impaired in patients with type 2 diabetes. Because the association between clock gene expression and glucose tolerance is also detected in subjects without diabetes, favorable lifestyles (e.g. awake time, bedtime, drinking) to maintain circadian clock function are important for the prevention of type 2 diabetes. However, lifestyles which may affect the biological clock are common. Because it is difficult to alter such a lifestyle in modern societies, a therapeutic agent for the correction of the impaired clock is strongly desired.