

OS01-1

Oral administration of Bifidobacterium spp. improves insulin resistance, induces adiponectin and prevents inflammatory adipokine expressions

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Objectives (rationale or hypothesis); The intestinal microbiome might be an important contributor to the development of type 2 diabetes. This study was designed to test the hypothesis that oral administration of Bifidobacterium species (spp.) (including *B. longum*, *B. bifidum*, *B. infantis*, and *B. animalis*) may both ameliorate insulin resistance and reduce the expressions of inflammatory adipocytokines.
Method, result and finding; Male Swiss-Webster mice fed a high-fat diet with or without oral administration of Bifidobacterium spp. for 5 weeks were subjected to an insulin tolerance test (ITT) and an oral glucose tolerance test (OGTT). Plasma levels of glucose at 30, 60, 90 and 120 min after intraperitoneal insulin injection or oral glucose ingestion were significantly lower in the Bifidobacterium spp. -administered group than in the control group ($P < 0.05$), showing the beneficial effect of this oral administration on insulin resistance in obese Swiss mice. In addition, Bifidobacterium spp. increased the adiponectin mRNA level and decreased those of monocyte chemoattractant protein 1 and interleukin 6 in non-diabetic C57BL/6J mice fed a normal diet, indicating a molecular mechanism which may ameliorate the inflammatory state, thereby reducing insulin resistance.
Conclusion; oral administration of Bifidobacterium spp. improves insulin resistance and glucose tolerance in obese mice by reducing inflammation, as it does in the lean state.

keywords: enteric bacteria, adipokine, insulin sensitivity

OS01-3

The relationship of glycemic control and dietary patterns to the sleep quality on type 2 diabetes patients

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Objective

To examine the association between sleep disorder and level of glycated hemoglobin and the frequency of food pattern intake in patients with type 2 diabetes mellitus.

Material and Methods

An cross-sectional study targeting total of 250 patients from a diabetes-specific polyclinic is ongoing in southern Taiwan. Data were collected which included a Chinese version of the Athens Insomnia Scale (CAIS), food frequency questionnaire (FFQ) and patients' biochemical data from their medical records. Patients with CAIS score ≥ 6 were defined as insomnia.

Results

Preliminary data from 61 diabetes patients showed that patients with insomnia ($n=18$) had higher mean value of HbA1c when compared to those without insomnia ($n=43$, $8.0 \pm 1.0\%$ vs $7.0 \pm 0.9\%$, $P=0.002$). Logistic regression analysis adjusted with age, sex, known diabetes duration, social economic status, BMI, and blood pressure revealed that HbA1c is an independent factor for sleep quality ($p=0.006$). However, the frequency of grain, meat, fruit, and vegetable intake were not associated with sleep quality and HbA1c level.

Conclusion

Diabetic patients with insomnia is associated with poor glycemic control, yet, the diet pattern in patients with insomnia in association with glycemic control still need to be clarified.

keywords: diabetes, sleep quality, diet pattern

OS01-2

Effectiveness of vitamin D-fortified yogurt drink on glycemic status and endothelial biomarkers in subjects with type 2 diabetes

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Objective: In this study, the effects of improvement of vitamin D status on glycemic status, lipid profile and endothelial biomarkers in T2D subjects were investigated. **METHODS**: Subjects with T2D were randomly allocated to one of the two groups to receive either plain yogurt drink (PYD; containing 170 mg calcium and no vitamin D/250 mL, $n_1 = 50$) or vitamin D3-fortified yogurt drink (FYD; containing 170 mg calcium and 500 IU/250 mL, $n_2 = 50$) twice a day for 12 weeks. **RESULTS**: The intervention resulted in a significant improvement in fasting glucose, the Quantitative Insulin Check Index (QUICKI), glycated hemoglobin (HbA1c), triacylglycerols, high-density lipoprotein cholesterol (HDL-C), endothelin-1, E-selectin and MMP-9 in FYD compared to PYD ($P < 0.05$, for all). Interestingly, difference in changes of endothelin-1, E-selectin and MMP-9 concentrations in FYD compared to PYD (-0.35 ± 0.63 versus -0.03 ± 0.55 , $P = 0.028$; -3.8 ± 7.3 versus 0.95 ± 8.3 , $P = 0.003$ and -2.3 ± 3.7 versus 0.44 ± 7.1 ng/mL, respectively, $P < 0.05$ for all), even after controlling for changes of QUICKI, FM and waist circumference, remained significant for endothelin-1 and MMP-9 ($P = 0.009$ and $P = 0.005$, respectively) but disappeared for E-selectin ($P = 0.092$). **CONCLUSIONS**: The major finding of the present study is that ameliorated vitamin D status is accompanied by improved glycemic status, lipid profile and endothelial biomarkers in T2D subjects. Our findings suggest both direct and indirect ameliorating effects of vitamin D on the endothelial biomarkers.

keywords: Vitamin D, Fortification, Type 2 Diabetes

OS01-4

The dawn of the diabetic diet therapy for diabetic dialysis patients in Japan: the wonderful effect of basic carbohydrate counting

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The usage of "Food Exchange Lists-Dietary Guidance for Persons with Diabetes (in Japanese)" for diabetic hemodialysis patients was surveyed in 20 hemodialysis clinics and hospitals. This instrument was not used for hemodialysis patients because they need potassium and phosphorus control in daily dietary control and so on.

The knowledge that only carbohydrates change into postprandial blood sugar was also surveyed in 19 hemodialysis patients, 22 doctors with dialysis specialized license, 10 nurses and 5 clinical engineers. Only one patient and doctor knew this fact. All other people misunderstood that total energy intake changes into postprandial blood sugar.

The basic carbohydrate counting, which has been established according to the above fact is commonly recognized as diet therapy for diabetics in Europe and the United States. But the effects for diabetic dialysis patients have not been reported until now. We elucidated the effect of this method for diabetic 19 hemodialysis patients: a mean age of 61.7 ± 10.3 years, the dialysis period of 3.5 ± 4.0 years. Fifteen patients had received insulin. Any agents that influenced blood profile were not changed. Changes in HbA1c, glucose, T-Cho, LDL-Cho, HDL-Cho, TG, K, P, BMI and GNRI were investigated for 1 to 6 months. The HbA1c, glucose and TG value significantly decreased and there were no changes in any other parameter. And the ratio of carbohydrate in food calorie intake was $51.0 \pm 4.7\%$. It was thought that this method can be performed independently from phosphorus and potassium control.

The basic carbohydrate counting is thought to be the only useful diet methodology for diabetic dialysis patients in the present Japan. This is the dawn of the diet therapy for diabetic dialysis patients in Japan and Cambodia.

keywords: Diabetic dialysis patients, Basic carbohydrate counting