



## PP-D-21

### THE EFFECT OF PROBIOTICS ON INSULIN SENSITIVITY, GLYCEMIC CONTROL AND LIPID PROFILE IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

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**Zin Myo Latt,<sup>1</sup> Ko Ko,<sup>2</sup> Tint Swe Latt,<sup>2</sup> Moe Wint Aung,<sup>1</sup> Than Than Aye<sup>2</sup>**

<sup>1</sup>University of Medicine 1, Yangon, Myanmar

<sup>2</sup>University of Medicine 2, Yangon, Myanmar

#### OBJECTIVES

Fermented kimchi, a traditional Korean food, which contains multi-strained probiotics (Innolac) is purported to have beneficial effects on glucose and lipid metabolism in patients with prediabetes and obesity. However, the effect of probiotics in patients with type 2 diabetes remains unclear. This study investigated the effect of probiotics on insulin sensitivity, glycemic control and lipid profile in patients with type 2 diabetes mellitus.

#### METHODOLOGY

This was a hospital-based, randomized controlled clinical study conducted in patients consulting at the diabetes clinic of North Okkalapa General and Teaching Hospital during January 2019 to October 2020. A total of 75 patients with HbA1c 7.0% to 8.0% were recruited and prospectively randomized. Eleven patients (14.6% of study population) dropped out, and 32 patients in each group were studied to receive either oral probiotics sachet daily (probiotics group n = 32) or usual medical care (control group n=32) for two months. Determination of HOMA-IR, HbA1c and fasting lipid profile (TC, HDL, LDL and TG) was done at baseline and after 2 months. Mean changes between both groups were compared and analyzed by per protocol analysis.

#### RESULTS

There was no significant difference in baseline clinical characteristics between the two groups. The probiotics group showed significant improvement of fasting insulin (-4.26 ± 1.87 mU/L reduction, P=0.02, 95% CI), insulin sensitivity (-1.53 ± 0.67 HOMA IR reduction, P=0.02, 95% CI) and TG level (-25.65 ± 9.68 mg/dl, P=0.01, 95% CI) compared with the control group. There was no significant improvement of glycemic control (FBG and HbA1c), TC, HDL and LDL in the probiotics group compared with the control group. No significant adverse event was seen in both groups.

#### CONCLUSIONS

In patients with inadequately controlled type 2 diabetes mellitus, supplementation of probiotics revealed improvement in insulin sensitivity (HOMA-IR), fasting insulin and triglyceride (TG) but did not show improvement in FBG, HbA1C and lipid profile (TC, HDL and LDL).

## PP-D-22

### IMPACT OF LIVER STEATOSIS ON GLYCEMIC IMPROVEMENT AT SIX MONTHS AFTER BARIATRIC SURGERY

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**Mei Chung Moh,<sup>1</sup> Kenny Ching Pan Sze,<sup>1</sup> Sharon Nadiyah Binte Shahul Hameed,<sup>1</sup> Boon Khim Lim,<sup>1</sup> Bhuvaneswari Pandian,<sup>1</sup> Tavintharan Subramaniam,<sup>1</sup> Chee Fang Sum,<sup>1</sup> Su Chi Lim<sup>1,2,3</sup>**

<sup>1</sup>Alexandra Health Pte Ltd / Khoo Teck Puat Hospital, Singapore

<sup>2</sup>Saw Swee Hock School of Public Health / National University Hospital, Singapore

<sup>3</sup>Lee Kong Chian School of Medicine / Nanyang Technological University, Singapore

#### OBJECTIVES

Non-alcoholic fatty liver disease (NAFLD) is strongly associated with obesity and increases the risk of type 2 diabetes (T2D) development. This pilot prospective study aimed to determine whether the severity of liver steatosis/fibrosis was associated with glycaemic improvement after bariatric surgery in adults with T2D.

#### METHODOLOGY

Patients with T2D scheduled for either Roux-en-Y gastric bypass or sleeve gastrectomy were recruited (n = 15; age: 46 ± 8 years, 46.7% males, body mass index (BMI): 40.8 ± 6.1 kg/m<sup>2</sup>). Transient elastography with controlled attenuation parameter (CAP) was performed before surgery to assess liver steatosis and fibrosis. The study outcomes included relative percentage change in glycated haemoglobin (HbA1c) at 6-month post-surgery from baseline (pre-op), and T2D remission defined as 6-month HbA1c < 6.5% without glucose-lowering medications.

HbA1c levels reduced from 7.4 ± 1.4% to 6.3 ± 1.0% at 6 months after surgery. The median relative percentage decrease in HbA1c was 13.4% (interquartile range: -25.8 to -6.3). The baseline CAP score (mean: 342 ± 50 dB/m; reflecting liver steatosis), but not the liver stiffness measurement score (reflecting liver fibrosis), was correlated with the relative percentage change in HbA1c (rho = 0.64, P=0.034). Linear regression analysis shows that higher CAP value was associated with reduced magnitude of HbA1c reduction (B = 0.21, 95% CI: 0.06–0.36, P=0.017) after adjustment for baseline age, sex, BMI and HbA1c. Similarly, lower CAP score independently predicted T2D remission (relative risk=0.96, 95% CI: 0.94–0.97, P<0.001).

#### CONCLUSIONS

Increased liver steatosis is associated with poorer glycaemic outcome after bariatric surgery. Therefore, interventions to reduce liver steatosis prior surgery may improve post-surgical glycaemic control in people with T2D.