A low carbohydrate, high MUFA oral nutritional supplement (ONS) improves glycaemic control in type 2 diabetes

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Introduction & Objective(s)
Recent evidence indicates that better postprandial glycaemic control can reduce diabetes mellitus (DM)-associated complications; thus, blood glucose control is the primary goal of DM management. Standard enteral nutrition formulations (oral or tube) are high in carbohydrates, low in fat and fibre. Therefore, they may compromise glycaemic control in patients with diabetes. To improve outcomes, enteral nutrition (EN) formulae specifically designed for patients with hyperglycaemia or DM, with increased amount of fat as Monounsaturated fatty acids (MUFA), Medium Chain Triglycerides (MCT) and fish oil; decreased amount of modified carbohydrates with a low glycaemic index and with fibre, have been developed. The aim of the present study was to show superiority of a Diabetes Specific Oral Nutritional Supplement (DS-ONS) compared to a Standard ONS, on post-prandial glucose response after 12 weeks supplementation in type 2 diabetic patients at risk of malnutrition.

Materials & Methods
Study design and patient population: The study was randomised, controlled double-blind, parallel-group performed in 40 elderly type-2 diabetic patients with or at risk of malnutrition on oral medication (sulfonylureas and metformin).

Intervention:
Patients were randomised to receive:
• DS-ONS (Diben DRINK, Fresenius Kabi, n = 20) or
• Isocaloric, standard ONS with fibre (n = 20, control)
→ 2 bottles of the product per day (2 x 200 ml) over 12 weeks in addition to regular meals

Assessments:
• Postprandial glucose response as incremental area under the curve (iAUC0–240) during 240 minutes
• Additional parameters of glucose and lipid metabolism, triglyceride response, functional and nutritional status and gastrointestinal tolerance, palatability and compliance questionnaires
→ at baseline, in study weeks 6 and 12

Results
Patients in both groups were comparable with respect to baseline characteristics (mean ± SD age 81.8 ± 8 yr. BMI 23.8 ± 4 kg/m². HbA1c 7.3 ± 0.63%).

With diabetes-specific ONS vs. control:
• Significantly lower postprandial glucose iAUC0–240 and peak glucose (PPG)

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<tr>
<th>WEEK 6</th>
<th>HbA1c</th>
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<tbody>
<tr>
<td>Control (n = 20)</td>
<td>Diben DRINK (n = 20)</td>
</tr>
<tr>
<td>-0.5</td>
<td>0.25</td>
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<tr>
<td>0.25</td>
<td>0.75</td>
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<tr>
<td>0.75</td>
<td>1.25</td>
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• Greater decrease in HbA1c (p = 0.028) after 12 weeks

- No significant differences in triglyceride response

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<thead>
<tr>
<th>AUC triglyceride</th>
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<tr>
<td>Control (n = 20)</td>
</tr>
<tr>
<td>6000</td>
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<td>8000</td>
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• Significant weight gain in both groups (p < 0.05)

• No significant differences in lipid parameters
• Fasting insulin/HOMA-index

Conclusion
Compared to the standard sip feeds, Diben DRINK low in carbohydrates, high in MUFA with MCT and fish oil
• Significantly improved glycaemic control without adverse effects on lipid metabolism
• Significantly reduced postprandial hyperglycaemia
• Significantly improved long term glycaemic control (HbA1c)
• Safe, well tolerated and well accepted in type II diabetics in need of nutritional support

References