Resveratrol improves glucose tolerance in older adults with IGT
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### Abstract

Resveratrol treatment (via Sirt6 activation and/or other mechanisms) will result in improvements in insulin resistance, metabolic and vascular function in subjects with age-related glucose intolerance.

### HYPOTHESIS & AIMS

**Hypothesis**

Treatment with resveratrol (via Sirt1 activation and/or other mechanisms) will result in improvements in insulin resistance, metabolic and vascular function in subjects with age-related glucose intolerance.

**Aims**

- To assess the effect of resveratrol treatment (using doses up to 2 g/day) in older adults with impaired glucose tolerance on the following parameters:
  - Glucose and insulin levels during a standard mixed meal test
  - Insulin sensitivity
  - Inflammation and endothelial function
  - Safety and tolerability

### MATERIALS AND METHODS

**Study Design**

- Open-label study of resveratrol at 3 doses: 1, 1.5, and 2 g/day (given in divided doses)
- Standard meal protocol at baseline and after 4 weeks of treatment
- Subjects age 60-80 with IGT on OGTT (2-hour glucose 140-199 mg/dl)

**Endothelial function**

- Assessed by reactive hyperemia peripheral arterial tonometry (RH-PAT), which measures finger pulse wave amplitude at baseline and during post-occlusion hyperemia.
- Reactive hyperemia index (RHI) is the ratio of the average pulse amplitude in the post-hyperemic phase divided by the average baseline amplitude.
- RHI is correlated with coronary endothelial function and predicts CVD events.
- RHI previously reported to decline postprandially in subjects with IGT (Crandall, et al. JCEM 2016)

### RESULTS

**Fasting and post-prandial glucose during SMT**

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>Baseline</th>
<th>Resveratrol</th>
</tr>
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<tbody>
<tr>
<td>0</td>
<td>80</td>
<td>120</td>
</tr>
<tr>
<td>20</td>
<td>120</td>
<td>160</td>
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<tr>
<td>30</td>
<td>160</td>
<td>200</td>
</tr>
<tr>
<td>60</td>
<td>200</td>
<td>240</td>
</tr>
</tbody>
</table>

**Matsuda Index at baseline and after 4 weeks of resveratrol**

- The Matsuda Index (M.I.) is a non-invasive test for estimating the incidence of insulin resistance.
- A M.I. < 3.3 indicates insulin resistance.
- M.I. at baseline and after 4 weeks of resveratrol treatment.

### CONCLUSIONS

- In older adults with IGT, resveratrol treatment was well-tolerated and no toxicity was observed.
- These preliminary data support the conduct of larger studies to further investigate the effects of resveratrol on glucose metabolism and vascular function in humans.