Vitamin B12 and folate increase while the degree of inflammation decreases after weight loss in obese individuals


Conclusion
An 8-week weight loss on an LCD improved the status of vitamin B12 and folate and decreased the degree of inflammation in individuals with overweight and obesity. There was no correlation between the vitamin concentrations and the degree of inflammation.

1) Objective
Obesity is a major health problem worldwide and recent studies have shown negative correlations between obesity and the vitamins: B12 and/or folate. In addition, obesity is associated with low-grade chronic inflammation, which in a few studies has been proposed as the explanation for the relationship between some vitamins and obesity.

2) Aim
To investigate the effect of weight loss in overweight and obese individuals on status of vitamin B12 and folate and on the degree of inflammation (measured by C-reactive protein).

3) Subjects
- 85 volunteers
- 18 to 60 years old
- BMI between 28 and 40 kg/m²

4) Methods
- Analyses of an 8-week weight loss period in the PROKA study (NCT01561131)
- Low caloric diet (LCD) with 800-1000 kcal/day (Nup, Greve, Denmark)
- Serum vitamin B12, folate and homocysteine were measured on Immulite 1000 and 2000 using competitive ELISA methods (Siemens Healthcare, Diagnostics Products Ltd.)
- Serum C-reactive protein was measured on ABX Pentra 400 using turbidimetry

5) Statistical analysis
- Student’s t-test (paired)
- Multiple linear regressions adjusting for co-variates

6) Results
After paired t-test:
- Post weight loss serum vitamin B12 and folate concentrations were higher than pre weight loss (both P<0.001)
- C-reactive protein serum concentrations were lower after weight loss than before (P<0.001)

After adjusting for relevant co-variates:
- Vitamin B12 and folate concentrations correlated negatively with homocysteine concentrations (P<0.001)
- The vitamin concentrations did not correlate with BMI, but folate concentration was negatively correlated with waist-hip ratio (P=0.031)

Median for serum concentrations and BMI

<table>
<thead>
<tr>
<th>Serum Vitamin B12, pg/mL</th>
<th>BMI, kg/m²</th>
<th>Hcy, µmol/L</th>
<th>CRP, mg/L</th>
<th>Folate, ng/mL</th>
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<tbody>
<tr>
<td>31.9</td>
<td>436</td>
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<tr>
<td>450</td>
<td>30</td>
<td>10</td>
<td>0.6</td>
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<tr>
<td>Before weight loss</td>
<td>After weight loss</td>
<td></td>
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</tbody>
</table>

Major references:


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