Correlation between levels of β-hydroxybutyrate and fatty acids in blood and milk and its impact on ketosis diagnosis in dairy cows

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In high producing dairy cows, discrepancy between production needs and energy intake occurs frequently inducing a negative energy balance (NEB) with fat mobilisation and production of ketone bodies. If excessively, accumulation of ketone bodies leads to clinical and subclinical ketosis (SKC).

**Symptoms:** increased incidence of periparturient diseases
Decreased milk yield - Poor reproduction performance

**Diagnosis:** Gold standard = Dosage of BHB (β-hydroxybutyrate) and of non-esterified fatty acids (NEFA) in blood

**Aim of this study:** develop herd-level diagnosis methods of SKC on milk

**Material and Methods**
- 75 cows - 8 Herds – 1 visit (V)/month till pregnancy diagnosis
- Production levels - reproduction status recorded
- BHB in blood (BHBb): cow-side test (Optium Xceed®)
- BHB in milk (BHBm): colorimetric test (Boehringer)
- NEFA in blood: gas chromatography

**Results**

<table>
<thead>
<tr>
<th></th>
<th>Correlation NEFA</th>
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<tbody>
<tr>
<td></td>
<td>BHB blood (mmol/L)</td>
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<tr>
<td>r</td>
<td>V1</td>
</tr>
<tr>
<td>BHBb</td>
<td>0.41</td>
</tr>
<tr>
<td>BHBm</td>
<td>0.52</td>
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</tbody>
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**Conclusion:** High correlation between BHBb and BHBm decreasing with visit number. Higher correlation between BHBm and NEFA than with BHBb milk can be used for SKC diagnosis.