Cis-15 intermediates of biohydrogenation in the duodenal flow of cows receiving linseed

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Introduction
The pathway of C18:3 ruminal biohydrogenation (BH) leads to the production of cis-15 intermediates, including cis-9,trans-11,cis-15C18:3 (CLnA). The aim of this poster is to present the percentages of cis-15 intermediates of ruminal biohydrogenation (BH) in the duodenum of dairy cows receiving linseed. These results are based on a new method of analysis of samples (Akraim et al., 2006).

Results and discussion
The proportion of CLnA was low, in spite of the high C18:3 intake. The first step of C18:3 BH, isomerisation to CLnA, was extensive because the C18:3 proportion was 13.5 times lower in the duodenum than in the diet (Akraim et al., 2006). The extensive C18:3 BH and the low proportion of CLnA suggest a rapid ruminal reduction of this FA.

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<th>% of total C18 (mean ± SD)</th>
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<tr>
<td>cis-9,trans-11,cis-15C18:3 (CLnA)</td>
<td>0.21 ± 0.01</td>
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<tr>
<td>trans-11,cis-15C18:2</td>
<td>1.89 ± 1.21</td>
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<tr>
<td>cis-15C18:1</td>
<td>1.00 ± 0.49</td>
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The proportion of the product of this first reduction, trans-11,cis-15C18:2, was much higher than that of CLnA, but quite variable among cows. This suggests that the reduction of this FA was slower than that of CLnA, although this reduction is supposed to be due to a broad range of bacteria. According to responsible bacteria, this reduction can lead to trans-11C18:1, or cis-15C18:1 and trans-15C18:1. Cis-15C18:1 represented only half the proportion of trans-15C18:1, suggesting either the possibility of a direct BH of trans-11,cis-15C18:2 to trans-15C18:1, or a rapid isomerisation of cis-15C18:1 to trans-15C18:1.

Conclusion
These results provide evidence for CLnA in the rumen of cows receiving linseed. Among other cis-15 intermediates, trans-11,cis-15C18:2 was quantitatively the most important.

Reference cited