The cholesterol content in meat, fat and giblets of lambs depending on the breed and feeding

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Aim

• To investigate cholesterol content in meat, fat and giblets of lamb depending on feeding system and breed
Materials and methods

- 30 ram – lambs

Kołuda Sheep (n-15)
Ile de france x Kołuda Sheep (n-15)
### Materials and methods

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Diet Description</th>
</tr>
</thead>
</table>
| **C**     | - Intensive feeding  
            - Complete feed  
            - 15% rape cake and DDGS + 5% of linseed  
            - ad libitum  
            - n - 6 |
| **RC**    | - Grain mixture  
            - 50% rape cake  
            - 5% of linseed  
            - Grass hay - ad libitum  
            - n - 6 |
| **DDGS**  | - Grain mixture  
            - 50% DDGS  
            - 5% of linseed  
            - Grass hay - ad libitum  
            - n - 6 |
| **RC**    | - Grain mixture  
            - 50% rape cake  
            - 5% of linseed  
            - Grass hay - ad libitum  
            - n - 6 |
| **DDGS**  | - Grain mixture  
            - 50% DDGS  
            - 5% of linseed  
            - Grass hay - ad libitum  
            - n - 6 |

**Semi-intensive**

- Pasturing ~ 5 h/day
- Grain mixture intake – 3% of body weight
Materials and methods

• Rams were fattened to the body weight: 32-37 kgs
• Samples collected (longissimus lumborum muscle, cover fat and giblets: liver, lung, heart and kidney) and stored at -20 °C temperature
• Tissue fat extraction
• Cholesterol was determined using gas chromatography—Agilent Technologies gas chromatograph, type 7890A, column HP-5 (30 m × 320 μm × 0,25 μm)
• Statistical calculation (Statistica software v.6.0)
Sheep giblets
Results
The cholesterol content in meat, fat and giblets of lambs depending on the breed [mg/100g]

<table>
<thead>
<tr>
<th>Genotype</th>
<th>Meat</th>
<th>Cover fat</th>
<th>Liver</th>
<th>Lung</th>
<th>Heart</th>
<th>Kidney</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>x</td>
<td>v%</td>
<td>x</td>
<td>v%</td>
<td>x</td>
<td>v%</td>
</tr>
<tr>
<td>KS (n - 15)</td>
<td>45,8</td>
<td>30,9</td>
<td>72,1</td>
<td>32,4</td>
<td>257,3</td>
<td>35,7</td>
</tr>
<tr>
<td></td>
<td>692,4</td>
<td>34,6</td>
<td>41,3</td>
<td>34,2</td>
<td>189,3</td>
<td>22,4</td>
</tr>
<tr>
<td>IfxKS (n - 15)</td>
<td>46,9</td>
<td>36,8</td>
<td>70,9</td>
<td>44,4</td>
<td>228,3</td>
<td>30,3</td>
</tr>
<tr>
<td></td>
<td>574,0</td>
<td>18,5</td>
<td>41,2</td>
<td>48,3</td>
<td>213,2</td>
<td>33,1</td>
</tr>
</tbody>
</table>

KS – Kołuda Sheep
IfxKS – crossbreed Ile de France x Kołuda Sheep
The cholesterol content in meat, fat and giblets of lambs depending on fattening system [mg/100g]

<table>
<thead>
<tr>
<th>Genotype</th>
<th>Meat</th>
<th>Cover fat</th>
<th>Liver</th>
<th>Lung</th>
<th>Heart</th>
<th>Kidney</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>x</td>
<td>v%</td>
<td>x</td>
<td>v%</td>
<td>x</td>
<td>v%</td>
</tr>
<tr>
<td>IN (n - 6)</td>
<td>48,0</td>
<td>36,5</td>
<td>51,8a</td>
<td>27,7</td>
<td>223,7</td>
<td>35,5</td>
</tr>
<tr>
<td>SIN (n - 24)</td>
<td>46,0</td>
<td>33,5</td>
<td>76,4a</td>
<td>36,1</td>
<td>248,4</td>
<td>33,5</td>
</tr>
</tbody>
</table>

AA - P≤0,01; aa - P≤0,05
IN – intensive fattening system
SIN – semi-intensive fattening system
The cholesterol content in meat, fat and giblets of lambs depending on roughage [mg/100g]

<table>
<thead>
<tr>
<th>Roughage</th>
<th>Meat</th>
<th>Cover fat</th>
<th>Liver</th>
<th>Lung</th>
<th>Heart</th>
<th>Kidney</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>x</td>
<td>v%</td>
<td>x</td>
<td>v%</td>
<td>x</td>
<td>v%</td>
</tr>
<tr>
<td>Grass hay (n - 12)</td>
<td>41,9</td>
<td>38,3</td>
<td>73,7</td>
<td>41,3</td>
<td>209,6 a</td>
<td>26,8</td>
</tr>
<tr>
<td>Pasture (n - 12)</td>
<td>50,0</td>
<td>28,4</td>
<td>79,2</td>
<td>32,3</td>
<td>290,7a</td>
<td>30,7</td>
</tr>
</tbody>
</table>
The cholesterol content in meat, fat and giblets of lambs depending on use of oil by-products [mg/100g]

<table>
<thead>
<tr>
<th>Genotype</th>
<th>Meat</th>
<th>Cover fat</th>
<th>Liver</th>
<th>Lung</th>
<th>Heart</th>
<th>Kidney</th>
</tr>
</thead>
<tbody>
<tr>
<td>RC (n - 12)</td>
<td>47,0</td>
<td>34,4</td>
<td>82,6</td>
<td>33,0</td>
<td>250,3</td>
<td>43,9</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DDGS (n - 12)</td>
<td>44,9</td>
<td>33,8</td>
<td>70,3</td>
<td>39,5</td>
<td>246,3</td>
<td>17,6</td>
</tr>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

AA - P≤0,01; aa - P≤0,05
RC- Rape cake
DDGS - Dried Distillers Grains with Solubes
Statements:

• The tested tissues and organs differed in cholesterol content.
• The highest content of cholesterol was in the lung and in the liver and kidney.
• The lowest content of cholesterol was in meat and heart.
• Breed origin did not affect on content of cholesterol.
• The method of fattening influenced on cholesterol content in external fat and in heart.
• Pasturing increased the cholesterol content in the liver.
• The use of DDGS compared with RC, increased the cholesterol content in the lungs.
Thank you for listening