Some nutritive-value features of venison from red deer stags and hinds

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**Objectives**

To compare the nutritive value of venison from red deer stags and hinds, in terms of:

1. Total iron and % haem iron
2. The bioactive compounds coenzyme Q₁₀, taurine and carnosine
3. Fatty acid proportions in intramuscular fat.

**Introduction**

- Some data is available on the nutritive value of venison from red deer [1], but there is limited information on differences between venison from red deer stags and hinds.
- There is also a lack of information on the concentrations of certain bioactive compounds in venison (i.e. non-nutritional compounds that are beneficial to the health or well-being of consumers).
- This poster presents data in both these areas.

**Methods**

- Twenty red deer (Cervus elaphus) made up of 10 stags (males) and 10 hinds (females) were slaughtered on the same day.
- The hinds and stags were from different farms, but all were finished on pastures of mainly perennial ryegrass and white clover.
- At ca. 24 h post mortem the longissimus muscle from the last rib to the pelvic bone was collected from both sides and chilled at 1-2°C for 7 d before being frozen.
- Analytical procedures for analysing intramuscular fat (Soxhlet), vitamin E (HPLC), fatty acids (GLC), and certain bioactive compounds (HPLC) were as reported for previous studies [2].
- Data was analysed by means of a one-way ANOVA model.

**Results**

- Mean carcass weight was 3.4 kg heavier for the stags (55.8 vs 52.4 kg; P = 0.04), but the hind carcasses were non-significantly fatter (GR of 5.4 vs 4.9 mm; P = 0.21).
- Short-loin sample weights were similar (~1200 g) for the two groups, but the hind samples had more intramuscular fat (Fig. 1).
- Muscle iron content at > 3.0 mg/100g (Table 1) was similar between groups, but higher than published values for beef and lamb [2].

**Conclusions**

1. Relative to venison from stags, that from hinds had more intramuscular fat, vitamin E, coenzyme Q₁₀, taurine, and anserine.
2. Relative to beef and lamb from other studies, venison contained more iron, less fat, but similar amounts of several bioactive compounds.

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**Table 1:** Means for concentrations of selected nutrients in the longissimus muscle of red deer

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Stags</th>
<th>Hinds</th>
<th>Sign</th>
<th>RSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total iron (mg/100g)</td>
<td>3.07</td>
<td>3.34</td>
<td>NS</td>
<td>0.31</td>
</tr>
<tr>
<td>Haem iron (% total)</td>
<td>83.4</td>
<td>83.4</td>
<td>NS</td>
<td>1.06</td>
</tr>
<tr>
<td>CoQ₁₀ (mg/100g)</td>
<td>2.82</td>
<td>6.29</td>
<td>***</td>
<td>0.98</td>
</tr>
<tr>
<td>Carnosine (mg/100g)</td>
<td>1.81</td>
<td>37.1</td>
<td>***</td>
<td>9.4</td>
</tr>
<tr>
<td>Vitamin E (mg/100g)</td>
<td>290.6</td>
<td>329.7</td>
<td>NS</td>
<td>46.5</td>
</tr>
<tr>
<td>Anserine (mg/100g)</td>
<td>188.2</td>
<td>251.4</td>
<td>***</td>
<td>31.3</td>
</tr>
</tbody>
</table>

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**Fig. 2** Differences between longissimus samples from red deer stags and hinds for the P/S ratio and n-6/n-3 ratio of intramuscular fat (means ± s.e.)

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**References**