MUSCULAR DISTRIBUTION OF TRICHINELLA spiralis LARVAE IN PORK FRESH MEET

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Abstract
The aim of this study was to determine the distribution of Trichinella spiralis cystizate or/and free larvae in pork fresh meat, in different muscular groups.

Keywords: Trichinella spiralis larvae, muscular groups, LPG-larvae per gram

INTRODUCTION
A serial of previous studies have relieved muscular distribution of Trichinella spiralis larvae from sylvan or domestic cycle, after experimental infestation on domestic or wild animals. The aim of the present study was to analyze the distribution of Trichinella spiralis larvae after natural infestation on pigs.

MATERIAL AND METHODS
This study took place in Laboratory of Parasithology from Sanitar Veterinary and Food Safety Department, Satu Mare on samples provided by a pig farm from Satu Mare.
We studied 51 pigs existent in this farm. We gathered blood sample trying to determine the carriers of Trichinella antibodies using an immunoenzymatic essay. The results showed 3 positive cases. These pigs were slaughtered and we gathered muscular samples (a number of 14 muscular groups) from each serologically suspect pig. The samples were examined using both trichineloscopy
and artificial digestion method, for confirmation and determination of Trichinella spiralis /g of muscle.

**TRICHINELOSCOPY METHOD**

This method relieves *Trichinella spiralis* in skeletal muscle, using a trichinelloscope with screen.

The samples are skeletal muscle of 0-20 g each. The presence of *Trichinella spiralis* larva or cyst confirms trichinelosis (Figure 2.1.)

![Figure 2.1. Trichinella spiralis – in pork fresh meet](image)

**ARTIFICIAL DIGESTION METHOD**

This method is based on relieving *Trichinella spiralis* larvae in skeletal muscle samples using a magnetic stirrer through artificial digestion (Figure 2.2.)

We examine samples from skeletal musculature of 1-2 g per each carcass, dependent on pig age.

The prepared must be examined immediately; we can not delay for the next day this examination. When we can not examine the prepareds in the first 30 minutes, these must be clarified. The final sample - 40 ml is poured on to a
graduate, left for 10 minutes. After that we remove the 30 ml of supernatant, keeping the last 10 ml. We bring this volume up to 40 ml adding tap water. After 10 minutes of decantation, we absorb 30 ml of supernatant and leave maximum 10 ml into a Petri dish or a larvae counting tank for examination. The graduate must be rinsed with a maximum quantity of 10 ml tap water, and the rinsing water must be added into the Petri dish or the larvae counting tank.

If the sediment is not clear, the sample is poured into a graduate, bringing the volume up to 40 ml with tap water. Than we repeat the procedure for maximum 4 times, as we mentioned above, till the sediment is clear enough to be examined.

Expression of the results is made using terms “negative” when are no larvae detected, and “positive “ when in one or more fields we detect at least one larva of Trichinella spiralis. (Figure 2.3.).

Figure 2.3. Trichinella spiralis larvae in pork fresh meet

RESULTS AND DISCUSSION

We made the ELISA immunoenzymatic tests on all 51 pigs from exploitation. We detected a number of 3 serological positive samples, sample no. 8, 23 and 35, suspects of trichinosis, carriers of Trichinella antibodies. These positive pigs were slaughtered and individually examined for Trichinella confirmation.

For evaluation of the distribution of Trichinella larvae, we studied 14 muscular groups by both trichineloscopy and artificial digestion method. We
determined the infestation level, respectively the number of larvae / gram of muscle (larvae per gram LPG).

The results are presented in Table 2.1.

Table nr. 2.1.
Distribution of Trichinella spiralis larvae in different muscular groups for samples no. 8, 23 and 35

<table>
<thead>
<tr>
<th>Muscular group</th>
<th>Sample no.8</th>
<th></th>
<th></th>
<th></th>
<th>Sample no.25</th>
<th></th>
<th></th>
<th></th>
<th>Sample no.35</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grams</td>
<td>Larvae</td>
<td>LPG</td>
<td>Grams</td>
<td>Larvae</td>
<td>LPG</td>
<td>Grams</td>
<td>Larvae</td>
<td>LPG</td>
<td>Grams</td>
<td>Larvae</td>
</tr>
<tr>
<td>1. Muzzle</td>
<td>3,45</td>
<td>0</td>
<td>0</td>
<td>7,54</td>
<td>0</td>
<td>0</td>
<td>4,93</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Masseter muscle</td>
<td>23,51</td>
<td>5</td>
<td>0,22</td>
<td>22,31</td>
<td>6</td>
<td>0,26</td>
<td>18,43</td>
<td>1</td>
<td>0,05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Tongue A (apex)</td>
<td>51,55</td>
<td>21</td>
<td>0,40</td>
<td>45,81</td>
<td>27</td>
<td>0,58</td>
<td>53,47</td>
<td>19</td>
<td>0,35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Tongue B (basis)</td>
<td>50,72</td>
<td>12</td>
<td>0,23</td>
<td>47,92</td>
<td>14</td>
<td>0,29</td>
<td>47,51</td>
<td>12</td>
<td>0,25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Auricular muscles</td>
<td>2,34</td>
<td>0</td>
<td>0</td>
<td>3,15</td>
<td>0</td>
<td>0</td>
<td>2,94</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Cervicals muscle</td>
<td>13,76</td>
<td>2</td>
<td>0,14</td>
<td>15,73</td>
<td>2</td>
<td>0,12</td>
<td>14,15</td>
<td>1</td>
<td>0,07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Expander muscle of the anterior arm</td>
<td>52,12</td>
<td>11</td>
<td>0,21</td>
<td>12,89</td>
<td>7</td>
<td>0,54</td>
<td>23,17</td>
<td>1</td>
<td>0,04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Intercostal muscles</td>
<td>21,27</td>
<td>6</td>
<td>0,28</td>
<td>19,36</td>
<td>11</td>
<td>0,56</td>
<td>20,29</td>
<td>1</td>
<td>0,04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Diaphragm pillars</td>
<td>21,54</td>
<td>17</td>
<td>0,78</td>
<td>21,75</td>
<td>21</td>
<td>0,96</td>
<td>19,32</td>
<td>13</td>
<td>0,67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Radial muscles of diaphragm</td>
<td>22,71</td>
<td>12</td>
<td>0,52</td>
<td>23,43</td>
<td>17</td>
<td>0,72</td>
<td>20,20</td>
<td>11</td>
<td>0,54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Dorsal muscle</td>
<td>39,52</td>
<td>3</td>
<td>0,07</td>
<td>45,11</td>
<td>9</td>
<td>0,19</td>
<td>41,31</td>
<td>2</td>
<td>0,04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Flank muscles</td>
<td>49,38</td>
<td>2</td>
<td>0,04</td>
<td>51,37</td>
<td>7</td>
<td>0,13</td>
<td>48,93</td>
<td>1</td>
<td>0,02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Tail muscles</td>
<td>4,52</td>
<td>1</td>
<td>0,22</td>
<td>5,71</td>
<td>2</td>
<td>0,35</td>
<td>4,73</td>
<td>1</td>
<td>0,21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Miocardus</td>
<td>7,77</td>
<td>2</td>
<td>0,25</td>
<td>8,93</td>
<td>4</td>
<td>0,44</td>
<td>7,96</td>
<td>2</td>
<td>0,25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results presented in Table nr. 2.1. relieved that all three serologically suspect pigs were infested with Trichinella spiralis larvae, confirming the diagnostic. The infestation level - LPG larva/g was 0.78 in diaphragm pillar for
pig no. 8 respectively 0.96 for pig no. 23. LPG was only 0.67 for pig no. 35. in the same muscular mass.

Regarding the muscular distribution of the *Trichinella spiralis* larvae, our study relieved that of diaphragm pillars is the most often infected muscular group.

We had also determined that, almost mathematically, the infestation level was greater in radial muscles of diaphragm, tongue A (apex), intercostals muscle, and we could not detect any larva in the samples provided from muzzie and auricular muscle.

The values of *Trichinella spiralis* infestation level are presented in decreasing order in graphic no. 2.1.

**Chart no. 2.1. Trichinella spiralis infestation level**

**CONCLUSIONS**

a) Diaphragm pillars groups and radial muscles of diaphragm have the greatest larvae charge, no matter what is the infestation level.

b) Muzzie and auricular larvae are free of *Trichinella spiralis* larvae.

c) The muscular groups most often infected, in decreasing order are: Diaphragm pillars, radial muscles of diaphragm, tongue muscles (apex and basis), masseters muscles and miocardus.
BIBLIOGRAPHY


