DOES THE TYPE OF TECHNOLOGY OF RAINBOW TROUT (ONCORHYNCHUS MYKISS) BREEDING INFLUENCE MORPHOLOGICAL PATTERN OF THE INTERNAL ORGANS AND IMMUNITY IN THIS FISH


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INTRODUCTION
Council Regulation (EC) No 710/2009 expressed request for rainbow trout (Onchorhyncus mykiss) evaluation of the influence of water recirculation on trout organism. The aim of the study was to evaluate the influence of two technologies of rainbow trout breeding: recirculation system (RS) and traditional open system (OS) on morphology of the internal organs and immunity.

MATERIAL AND METHODS
The study was conducted on 480 rainbow trout took from 6 farms on spring and late autumn 2011: 6 groups (n=80), A – C fish from OS, D – F fish from RS: A1 – F1 group: fish of 350 – 5000 g b.m., A2 – F2: 501 – 800 g b.m. (Table 1). The liver, spleen and kidneys were examined macroscopically, microscopically (HE and PAS method after McManus). The samples of the liver for ultrastructural examination were taken from 5 trouts from each groups. The immunological study was conducted to determinate metabolic and cidal activity of phagocytes and activity of T and B lymphocytes as well as lysozyme, ceruloplasmine, total protein and gamma-globulin level.

Table 1. Experiment layout

<table>
<thead>
<tr>
<th>Type of technology breeding</th>
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<tr>
<td>OS – open system</td>
<td>RS – recirculation system</td>
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<tr>
<td>A1-C1: 350 – 500 g</td>
<td>D1-F1: 350 – 500 g</td>
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<tr>
<td>A2-C2: 501 – 800 g</td>
<td>D2-F2: 501 – 800 g</td>
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RESULTS
A few retrogressive lesions and circulation disturbances were noted in the microscopic study. Other changes were observed sporadically. Ultrastructural examination also quite frequently revealed steatosis simplex. Mitochondrial oedematous, RER defragmentation and disorders in glycogen distribution occurred rarely. No statistically significant differences in the immunological parameters were found between RS and OS fish.

A1-C1: Fig. 5, 7; D1-F1: Fig. 1, 6, 8;
A2-C2: Fig. 4, 9. D2-F2: Fig. 2, 3, 10.

CONCLUSION
Examined technologies of rainbow trout breeding had similar influence on the pattern of internal organs. The differences were noted in the number of lesions. Rainbow trout bred in RS and OS showed similar cellular and humoral immunity.

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