INTRODUCTION

Presently, the production of rainbow trout involves the traditional rearing technology utilizing the free-flow water systems (OS), but more and more often the intensive method using water recirculation (RS) is used. In both systems the animal welfare should be maintained. The morphological studies of the liver are to give answers whether both technologies influence the histopathological pattern of the organ.

MATERIAL AND METHODS

The studies were conducted in spring and autumn during two years in 6 trout farms using the same feeding system, of which 3 used the OS system and 3 were using RS one. The studies were performed on 960 trouts divided into several group (each n=20). Half of them were of 350-500 g body mass (A), and the other half was in the range 501-850 g (B). The samples of the liver were fixed in 5% buffered formalin. The sections were stained with hematoxylin and eosin and with PAS method according to MacManus. The level of glycosaminoglycans was assessed semiquantitatively according to Szarek et al. (Acta Vet. Hung., 1985, 33(1-2): 25-32).

RESULTS

Microscopic lesions (especially lesions to the skin and scales) were observed more often in fish from RS systems. The majority of animals had the normal microscopical structure of the liver. Comparatively often, especially in the animals from RS system, steatosis simplex, congestion and melanomacrophages infiltration was seen. Sporadically, parenchymatous degeneration, single hepatocytes necrosis and lymphatic infiltration was seen. The pathological changes were more often visible in older animals from RS systems (however, the differences were not statistically confirmed). The changes were also more frequently visible in autumn. The levels of glycosaminoglycans in hepatocytes was differentiated – higher in animals from RS systems, especially in autumn in bigger individuals. A: Fig. 1, 2, 7, 8; B: Fig. 3-6, 9, 10; HE: Fig. 1-6; PAS: 4-10. Magn. as on the Fig. 1.

CONCLUSION

The intensity of lesions in the liver was higher in fish from RS system. Their localization suggests that they were of adaptive and alternative (to a lower extent) kind and to the low extent they were dependent on the rearing technology. The most sensitive point in the rearing of the trout are conditions of cellular respiration (water temperature and oxygen level).

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