ABSTRACT

The study included two experiments aimed at assessing the effect of squalene supplementation on growth, selected immune parameters, and cholesterol levels in the tissues of Siberian sturgeon (*Acipenser baerii*). In the first experiment, juvenile fish were fed for 70 days with feed containing varying doses of squalene (0.5–4%), and growth, hematological and biochemical blood parameters, liver histology, and cholesterol and squalene content in tissues were analyzed. In the second experiment, uniform supplementation (1% SQ) was used for two weeks, and then the persistence of the effects was observed depending on the rearing temperature (12°C, 18°C, and 24°C) after discontinuation of the supplement delivery.

The effect of squalene was reversible and short-term, which indicates the need for its continuous supply in feed under conditions of environmental stress. The results indicate that squalene did not affect sturgeon growth parameters. Squalene significantly reduces the intensity of the oxygen burst without weakening phagocytic activity. Changes in lipid metabolism were also observed, reflected in the modulation of cholesterol, squalene, and fatty acid concentrations in tissues. The highest level of supplementation (4%) caused damage to liver cells.

The data obtained allowed to determine a safe supplementation limit, demonstrated the role of ambient temperature in squalene metabolism, and confirmed the potential of Siberian sturgeon as a model species for research on squalene metabolism. The results also indicate the possibility of using squalene supplementation in the production of meat with functional food characteristics.

Keywords: squalene, cholesterol, Siberian sturgeon, feed supplementation, functional food