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Franz Lahnsteiner, Manfred Kletzl

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Pressure shock triploidization of *Salmo trutta* f. *lacustris* and *Salvelinus umbla* eggs and its impact on fish development

Franz Lahnsteiner* & Manfred Kletzl

Federal Agency for Water Management, Institute for Water Ecology, Fisheries and Lake Research, Scharfling 18, A-5310 Mondsee, Austria; Fishfarm Kreuzstein, Oberburgau 28, 4866 Unterach, Austria

Corresponding author: E-mail: Franz.Lahnsteiner@baw.at

ABSTRACT

The study tested the efficiency of hydrostatic pressure triploidization methods for *Salmo trutta* f. *lacustris* and *Salvelinus umbla* and investigated the effects on survival rate, skeletal malformation, and on morphometrics and cellular composition of gills, spleen, liver, kidney, intestine, and blood. In *Salmo trutta f. lacustris* a 100% triploidy rate in combination with high larvae survival rate (80% in comparison to control) was obtained when treating eggs with a pressure of 66 x 10^3 kPa 360 °C temperature minutes (CTM) post fertilization for 5 min, in *Salvelinus umbla* with a similar pressure after 270 CTM. Juvenile triploid *Salmo trutta* f. *lacustris* and *Salvelinus umbla* (145 days post hatch) had neither an increased rate of mortality, nor an increased rate of malformations. In triploid *Salmo trutta* f. *lacustris* and *Salvelinus umbla* the erythrocyte volume was 50% higher and the erythrocyte concentration in peripheral blood 25 - 35% lower relative to diploids. In triploids also the erythrocytes surface area : volume ratio was reduced. Gills of triploid *Salmo trutta* f. *lacustris* and *Salvelinus umbla* had increased width of primary lamellae and increased length of secondary lamellae which might compensate for unfavorable erythrocytes surface area : volume ratio.