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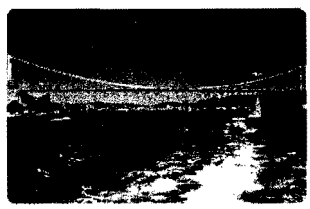
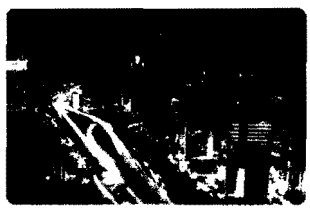
International Council for Laboratory Animal Science

"Laboratory Animal Science: New trends and perspectives"





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SYMPOSIUM BOOK

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An in vitro model for studying the interactions of rainbow trout (Oncorhynchus mykiss) pathogens with the isolated gut tractus

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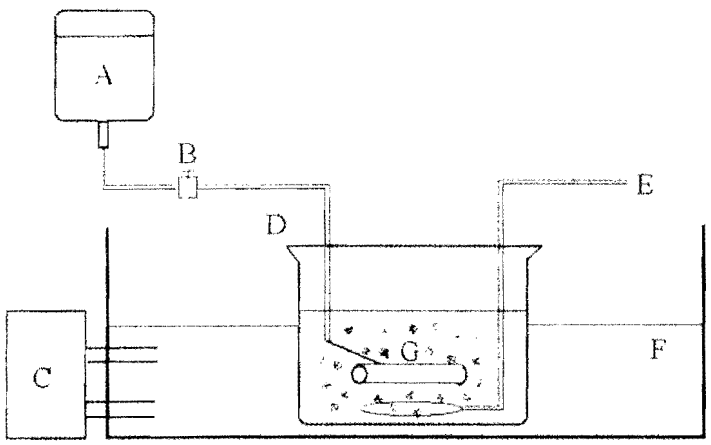
In this study, an alternative fish model with the principal aim for studying the interactions between fish pathogens and the gut tissue of rainbow trout was developed. The preparation consisted of an excised gut tractus from rainbow trout average weight 750-1000 g, perfused through cannulation of the aorta intestinalis ventralis or aorta intestinalis dorsalis and suspended in a circular bath filled with Ringer solution, which was aerated.

Different perfusion fluids were tested such as Ringer, Cortland, Ringer + adrenaline (0.3 mg/l) and Cortland + adrenaline (0.3 mg/l). The average perfusion rate was 3 ml/min/arch/kg body weight. Un-perfused gut placed in Ringer solution at the same temperature served as the non perfused gut tissue. Results demonstrated that Cortland and Cortland + adrenaline solutions was effective in maintaining the gut tissue in a healthy condition outside the body of the fish for 60 and 180 min with only slight oedema and sloughing of the gut epithelium. Conversely, unperfused gut revealed excessive tissue degeneration and severe necrosis. In conclusion, this model may be a valuable alternative method for using of live fish in research studies and leads effectively to a reduction in the number of experimental animals to be used on one hand and involves an elimination of pain and/or suffering on the other. Indeed, possible to try and elucidate the entrance route of pathogens into the fish's body and at the same time take into account the concept of animal welfare, which is, as it should be, nowadays very important.

Keywords: interactions, rainbow trout, pathogen, isolated gut, perfusion

FIGURES

Figure 1 Schematic representation of the gut perfusion apparatus



A = Drip, B = Drip control, C = Cooling system, D = Bath, E = Air, F = Water, G = Gut