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AN ANALYSIS OF ACID-BASE DISTURBANCES IN THE BLOOD FOLLOWING STRENUOUS ACTIVITY IN TROUT, (*SALMO GAIRDNERI*)

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Enforced activity caused a marked depression of plasma pH (7.85 $\pm$ 0.02 to 7.591$\pm$0.07) in *Salmo gairdneri*. Both lactate concentration and P_{co_2} of the plasma were elevated (10.5$\pm$1.3 mmol/l and 6.2$\pm$0.55 mmHg) immediately following exercise, but resting P_{co_2} (3.5$\pm$0.3 mmHg) was restored within 1 hour, whereas resting lactate levels (0.71$\pm$0.43 mmol/l) were not restored for at least 8 hours. The plasma acid base disturbance is caused largely by elevated plasma lactate levels, but a Davenport analysis based on measurements of pH and total CO_2 revealed a marked discrepancy between the amount of metabolic acid buffered by the blood and lactate anion concentration. Analysis of Na^+, K^+ and Cl^- concentrations of plasma showed simultaneous displacement of these ions. The H^+ deficit in blood appears to be due to buffering of H^+ in the intracellular body compartment and excretion into the environmental water.

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