**Name: Azeem Iqbal**

**Project title: Measuring standard metabolic rates of crayfish using the signal crayfish (*Pacifastacus leniusculus*) as a test species.**

The standard metabolic rate (SMR) stands as a crucial physiological measure that establishes the baseline for minimum aerobic energy metabolism. It plays a pivotal role in estimating daily energy expenditure, contributing significantly to our understanding of energy balance and metabolism. To evaluate the standard metabolic rate of crayfish, the conventional approach involves the quantification of oxygen consumption rates. Since organisms utilize oxygen to generate energy, measuring oxygen consumption serves as a reliable indicator of metabolic activity. In the assessment of crayfish's standard metabolic rate (SMR), we will employ intermittent flow respirometry using an advanced 8-chamber fiber-optic respirometry system and associated AutoResp™ software (version 2.3.0; Loligo® Systems, Viborg, Denmark). Each acrylic respirometry chamber, boasting a volume of 600 ml, will be connected to two Eheim submersible pumps (300 L/h; EHEIM GmbH & Co., Deizisau, Germany). This system operates in cycles to determine respiration rates, incorporating specialized sensors and equipment to monitor oxygen levels and calculate consumption accurately. The selection of crayfish for SMR calculation will be conducted randomly. To address existing knowledge gaps, we propose a project aimed at investigating the SMR. Experiments will be limited to a 24-hour duration, allowing sufficient time for crayfish acclimation to the respirometer, ensuring a reliable evaluation of SMR. The MLND method and q0·20 method will be employed for SMR calculation, contributing to a comprehensive understanding of crayfish metabolic rates. By delving into these findings, we aim to provide an accurate determination of crayfish SMR. The calculation of the standard metabolic rate over a total period of 32 hours, including the acclimation period, is designed to capture a representative sample of crayfish metabolic activity while minimizing the impact of fluctuations and ensuring the collection of reliable data. In essence, this project seeks to offer novel insights into the metabolic rate dynamics of crayfish.

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