THE RATE OF GLYCOLYSIS REACTION OF ADAPTIVE MUSCLE REGIONS WITH HIGH MITOCHONDRIAL LEVELS

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BACKGROUND

The study completed was important for investigating which muscles with high motor function in homologous subjects would produce ATP quicker, reulting in completion of the glycolysis process. *Grylloidea*, *G. gallus domesticus* and *Carassius auratus* were all chosen for their comparative anatomical locations.

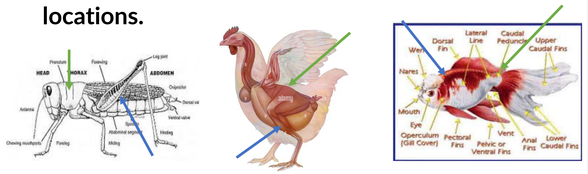

Fig. 1. Sample tissue was extracted from homologous regions. Samples regions are indicated by the arrows from A. Cricket, B. Chicken, and C. Goldfish

METHODS

1. Tissue of thigh and thorax was isolated from 50 crickets (*Grylloidea*), thigh and back of chicken (*Gallus gallus domesticus*), and caudal peduncle and muscular region anterior to dorsal fin and dorsal to gill covers of goldfish (*Carassius auratus*) was isolated (Fig. 1).
2. Tissue samples were homogenized with cold buffer and filtered through cheesecloth
3. Methylene Blue for indicator (0.32M Mannitol Buffer, Buffer-Cofactor-dye mix, and 0.015M Glucose) was added.
4. Experimental samples were incubated at 35C and observed for colormetric change.

RESULTS

Table 1 Raw data results of three experimental trails. (+) sign indicates a positive reaction of whitening. (-) sign indicates a negative reaction compared to the negative control (no color change).

	1 Cricket Thigh	2 Chicken Thigh	3 Goldfish Anterior Muscle	4 Cricket Thorax	5 Chicken Back	6 Goldfish Caudal Peduncle	7 Negative Control
Trial 1	-	-	-	+	-	-	-
Trial 2	-	-	-	+	-	-	-
Trial 3	-	-	-	+	-	-	-

Cricket thorax samples showed **colorimetric** change indicating **completion of glycolysis**; chicken and goldfish needed **different methods** for **euthanasia**.

Fig. 2. Reduction of methylene blue with cricket thoraces. After one hour of incubation at 35C, Tube 4 (cricket thoraces) reduced causing the color change from blue to white. Experiment was conducted 3 times.

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FUTURE

In the future, the experiment could be improved and expanded by revising the methods and proposing new questions. The cull method can be improved by euthanizing the fish with hypothermic shock in an ice-water bath. As for the chicken, cervical dislocation must be done the day of the experiment. This would leave less room for error and lead to more accurate results of regression and biochemical analysis. A future study would reassess the research question and, additionally, address the evolutionary component of developed muscle and motion comparison between a goldfish, cricket, chicken, and potentially a mouse. Does natural selection play a role in developed muscles and therefore regions with larger amounts of mitochondria? Although the experiment did not produce results supportive of the hypothesis, a new component was discovered: evolution. The evolutionary element will be an investigative procedure with a need for animal history to ensure developed muscles.

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