YOLK PROTEIN TRANSPORT IN THE SHRIMP, *SICYONIA INGENTIS*, MEASURED BY ^{125}I-LABELED VITELLIN

by

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A thesis

submitted in partial

fulfillment of the requirements for the degree of

Master of Arts in Biology

in the School of Natural Sciences

California State University, Fresno

August 1997

ABSTRACT

YOLK PROTEIN TRANSPORT IN THE SHRIMP, *SICYONIA INGENTIS*, MEASURED BY ^{125}I-LABELED VITELLIN

The mechanisms by which vitellogenin (Vg) is incorporated into developing oocytes were investigated. Ovary membranes and vitellin (Vn) were isolated from vitellogenic female shrimp. Iodinated Vn was used in both radioreceptor and transport assays. To identify a vitellogenin receptor on ovary membranes, a radioreceptor binding assay was developed; however, no specific binding to ovary membranes was developed. To identify a Vg transporter, enzyme kinetics were examined. A timed transport assay revealed that uptake was linear and constant from 1 to 4 minutes of incubation. Therefore, 3-minute incubations were used to determine the enzyme kinetics. A Vg transporter was found with a K_m of 1.15 μM (SE ± 0.08) and a V_{max} of 57.7 ± 8.7 pmol/mg membrane protein/3 minutes. External unlabeled Vn showed a significantly higher ($p \leq 0.004$, 2-way ANOVA, Tukey's Test) release of ^{125}I-Vn from preloaded membrane vesicles than just phosphate buffer.

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August 1997

ACKNOWLEDGMENTS

I would like to thank my committee members, Drs. Brian Tsukimura, Ray Abhold, and Jim Prince. In particular, I would like to thank Brian Tsukimura for teaching me various lab techniques, giving me valuable advice, and devoting a significant amount of his time helping me complete this project. I'd like to thank my good friend Ted Wargo for always making me laugh and for his wonderful cooking. Also, my friends Larry Riley and Dave Hollis made my Fresno experience one to remember. Larry, 2-4 is better than 0-4. Dave, I'll try to learn how to relax and not "stress-out" too much. Thanks to Anu Kumar for the invaluable help in lab. Lastly, I'd like to thank my family for providing encouragement and support.

CALIFORNIA SEA GRANT Tsukimura; R/A-1PD