The sheepshead minnow is widely used in ecotoxicological studies and such investigations have begun to focus on potential disruption of the thyroid axis. However, normal levels of thyroxin ($T_4$) and 3,5,3'-triiodothyronine ($T_3$) and their developmental patterns are unknown. This study set out to determine the profiles of whole-body thyroxin ($T_4$) and 3,5,3'-triiodothyronine ($T_3$) levels during the development of sheepshead minnow from embryo to juvenile and adults.

**INTRODUCTION**

To provide these baseline data, radioimmunoassays were developed and validated for analysis of $T_4$ and $T_3$ after extraction from whole fish.

**MATERIALS AND METHODS**

**RESULTS AND DISCUSSION**

- Adult female fish showed consistently higher thyroid hormone levels (1.5 fold more $T_4$ and 2 fold more $T_3$) than adult male fish.
- Analysis of thyroid hormones showed a significant rise in both $T_4$ and $T_3$ during the pre-hatch period, indicating embryonic production of both thyroid hormones.
- After hatching, whole body content of thyroid hormones significantly increased in early development, peaking at 12 days post-hatch when $T_4$ reached $17.4 \pm 1.35$ ng/larvae and $T_3$ reached $0.21 \pm 0.01$ ng/larvae.
- Thyroid hormones subsequently declined to a plateau in later development with approximately 10 ng/larvae $T_4$ and 0.10 ng/larvae $T_3$.
- These data suggest a prominent role for thyroid hormones in early developmental process when we predict that the ecotoxicological effects of thyroid disruptors will be most significant.
- This study establishes a baseline for thyroid hormones in sheepshead minnows, which will be vital for the understanding of thyroid hormone functions and in future studies of thyroid toxicants in this species.