

A study on the energy source in the developing embryo of the mangrove horseshoe crab, *Carcinoscorpius rotundicauda* (Latreille)

Type: Article

Abstract:

The mangrove horseshoe crab, *Carcinoscorpius rotundicauda*, is an Asian species found in Malaysia. This ancient arthropod has a long incubational period during which it depends on various energy sources for both embryogenesis and organogenesis. This study describes the trend of energy utilization from the endogenous reserves by the developing embryos from 0 to 40 days of incubation (until the hatching of the larvae). The dry weight, insoluble protein, carbohydrate, glycogen and lipid showed a declining trend from 0 to 40 days of incubation, whereas the wet weight, water content, ash content and soluble protein showed an increasing trend. Selected micro-elements such as Cu^{2+} , Fe^{2+} and Zn^{2+} also demonstrated an interesting trend in the developing eggs when the egg mass was subjected to inductively coupled plasma mass spectrometry analysis, where these elements showed a high correlation with the moulting stages and egg development. Maximum variations within the micro-elements were observed during the 1st (10 days after fertilization) and 2nd (35-36 days after fertilization) moulting stages within the developing eggs. This study clearly indicated that the moulting cycles of *C. rotundicauda* during embryonic development influence energy utilization in the form of carbohydrates, lipids, proteins, glycogen and other micro-elements.

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