

Thesis Title N-Acetyltransferase and Melatonin
 Levels in Optic Lobes of Fast-
 Growing and Slow-Growing,
 Macrobrachium rosenbergii de Man.
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Date of Graduation 19 April B.E. 2536 (1993)

Abstract

Growth pattern of the giant freshwater prawn, M. rosenbergii is characterized by a different growth rate among individuals. This phenomenon is known as heterogeneous individual growth (HIG). Population of the prawns in a single-aged group could be roughly divided into two groups: one is the exceptionally fast-growing individuals or "jumpers" and the other is the severely growth-repressed individuals or "laggards". The explanation for this peculiar phenomenon is under investigation in several laboratories. Two main hypothesis have been suggested, one is the genetic difference and the other is the social interactions. The effect of social interactions suggested include a competition for food and a release of certain substance from the "jumpers" to inhibit growth of the "laggards". Current findings

suggest that the social interactions may play a more important role than the genetic factor. Recent studies indicated that an indole, 5-methoxy indole acetic acid (5-MIAA), is a growth stimulant in M. rosenbergii and the enzyme N-acetyltransferase (NAT), which is one of the enzyme in the biosynthetic pathway of 5-MIAA in higher species, is abundant in the optic lobe of M. rosenbergii. These findings raise a possibility of NAT as a factor accounting for HIG; i.e. possible difference in NAT levels between the jumpers and laggards might contribute to the difference in the indole levels and, subsequently, the difference in growth rate. NAT activity and melatonin concentration were therefore determined in the optic lobes of the jumpers and laggards. The result revealed that the two parameters did not differ in both groups of prawns. These findings suggest that the enzyme is not a determining factor concerning HIG of M. rosenbergii. Light microscopic study of the optic lobes of the jumpers and laggards also revealed no obviously morphological difference between the two groups.