

P A R T - I I I

BIOLOGY, LIFE HISTORY AND POST EMBRYONIC STAGES

BIOLOGY, LIFE HISTORY AND POST EMBRYONIC STAGES

The studies of detailed biology, life history and developmental stages of Kalriana anisi, n.sp., were done at Karachi University. The species Kalriana karachi, n.sp. was also partly studied in order to compare the salient features of the biology of the two species.

Culturing techniques

i) The Kalri Lake, which served as the initial source of all Atyid specimens used in the present investigation is located as indicated earlier, at a distance of nearly 70 miles from our laboratories. During the months of November and February, the Kalriana spp. are not available in surface water in large numbers. Therefore, in order to transport sufficient live material from Kalri lake, a number of measures were adopted. We kept in view the frequency schedule of Kalriana spp. and used large sized plastic containers for transporting the lake water along with live material. Most of the collection of live material was done from March to October in the morning and evening hours when large quantities of Kalriana spp. can be easily caught in surface waters. Large size water containers^{were} helpful in saving the animals from immense jerks in vehicles moving on uneven roads.

ii) Usually berried females were transported to the laboratory, alongwith lake water and leaves of Vallesenaria spp. Plastic dishes of rectangular shape 10"x7.5"x2" with slanting walls were used for the purpose of rearing. Each dish was filled nearly 1/2 by the tap water and a single berried female was placed in each dish. A few leaves of Vallesenaria spp. placed in the dish served as the food of the species. A number of media from typical lake water, to distilled water as well as intermediate combinations of lake and

tap water were tested for their suitability for laboratory breeding of Kalriana spp. Tap water thoroughly aerated proved the best (table 9.)

iii) As the eggs hatched in the dishes, the emerging larvae were transferred to water in glass petri dishes 6" in diameter. The water of these dishes was also periodically aerated. A few leaves of Vallesneria spp. served as the source of oxygen in water for the larvae. All the larval stages upto adults were reared in these dishes. Usually for crustacean cultures, various diets like Artemia larvae, fish muscles, boiled and powdered egg yolk (Galtsoff 1931) and yeast tablets have been used by workers all over the world. In these experiments I discovered that a mixture of powdered yeast and Vitamin B tablets proved most suitable for the developing larvae.

Biology

A close observation of the berried females showed that they continuously move their abdominal appendages, thereby creating a current for aeration of eggs. The eggs getting detached from the mother normally fail to hatch in experimental conditions. The total number of eggs counted on berried females were 41 to 220. Nearly 80 to 90% of the eggs successfully hatched into larvae. A mature egg is brownish in colour and almost semitransparent. Under high magnification lateral eye spots, thoracic appendages and gills of the developing embryo are visible.

Larvae of the first stage were found hatching with a jerking movement generally after every twelve minutes. Immediately after hatching they did not move for a few seconds but afterwards start swimming with the help of thoracic appendages.

Colonies of Vorticella spp. in the parent material brought with the lake water rapidly grow in laboratory dishes. Newly hatched larvae easily get entangled into these colonies and quickly die. It

was observed that tap water did not provide any such handicap in the rearing process.

Egg measurement

From the specimens collected from Boat Club point in different months, 355 eggs were collected from 25 specimens and measured. Length of the eggs fluctuated between 0.35 to 0.44 mm and breadth fluctuated between 0.28 to 0.38 mm. Out of 355 eggs, 302 eggs were 0.43 to 0.44 mm long, and 0.28 to 0.29 mm broad. Gordon (1930) mentioned few eggs being 0.31 mm broad and described them as immature. But the eggs of Kalriana were not immature at all because they were measured when the movement of thoracic appendages was visible within the egg case with the help of a low power microscope (10x4).

Table No.9

COMPARATIVE SURVIVAL OF K. ANISI IN VARIOUS

WATER MEDIA AT KARACHI UNIVERSITY

(For each test 5 dishes were used)

Date of introducing the animal	Date of observation	Lake water	75% Lake water 25% Tap water	50% Lake water 50% Dis-tilled water	50% Dis-tilled water 50% Tap water	Tap Water	Dis-tilled Water
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
24.vi.67	24.vi.67	Died immediately	Died immediately	Died immediately	Died immediately	Alive	Died immediately
26.vi.67	26.vi.67	*Alive	Alive	Alive	Alive	Alive	Alive
	27.vi.67	Alive	Alive	Alive	Alive	Alive	Died
	28.vi.67	Alive	Alive	*Alive	*Alive	Alive	
	29.vi.67	Alive	Alive	Alive	**Alive	Alive	
	30.vi.67	Alive	Alive	**Alive	Alive	Alive	
	1.vii.67	Infected with protozoa	Alive	Alive	Alive	Alive	
	2.vii.67	Alive	Alive	Alive	Alive	Alive	
	3.vii.67	Alive	Alive	Alive	Alive	Alive	
	4.vii.67	Alive	Alive	Alive	Alive	Alive	
	5.vii.67	Alive	Alive	Alive	Alive	Alive	
	6.vii.67	Alive	Alive	Alive	Alive	Alive	
	7.vii.67	Alive	Alive	Alive	Alive	Alive	
	8.vii.67	Alive	Alive	Died	Died	Alive	
	18.vii.67	Alive	Died			Alive	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
20.vii.67	20.vii.67	Alive	Alive	Alive	Alive	Alive	Alive
	21.vii.67	Alive	Alive	Alive	Alive	Alive	Alive
	22.vii.67	Alive	Alive	Alive	Alive	Alive	Alive
	23.vii.67	Alive	Alive	*Alive	Alive	Alive	Alive
	24.vii.67	Alive	Alive	Alive	Alive	Alive	Alive
	25.vii.67	Infected with protozoa.	Alive	Alive	Alive	Alive	Alive
	26.vii.67	*Infected with protozoa.	Alive	Alive	Alive	Alive	Alive
	27.vii.67	Infected with protozoa	Alive	Alive	Alive	Alive	Alive
	28.vii.67	Infected with protozoa	Alive	Alive	Alive	Alive	Alive
	29.vii.67	*Infected with protozoa	Alive	**Alive	Alive	Alive	Alive
	30.vii.67	Infected with protozoa	*Alive	Alive	Alive	Alive	Alive
	1.viii.67	Infected with protozoa	Died	Died	Alive	Alive	Alive
	2.viii.67	Infected with protozoa			Alive	Alive	Alive
	3.viii.67	Infected with protozoa			Alive	Alive	Alive
	4.viii.67	Died			Alive	Alive	Alive
	5.viii.67				Alive	Alive	Alive
	6.viii.67				Alive	Alive	Alive

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
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15.v111.67

Alive Alive

20.v111.67

Alive Alive

*Thoroughly
aerated
Lake water

**More
slu-
ggish
*Less
active

**More
slu-
ggish
*Less
active