

Effect of the ocular ablation in the molting process of rocky shrimp females, *Rynchocinetes typus*

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Abstract

*The effect of the unilateral ablation of the ocular peduncle in female of rocky shrimp *Rynchocinetes typus* was evaluated using duration of the molting cycle. A classic design was employed, a group of 12 shrimps with an ocular peduncle ablated and a control group with twelve specimens with intact ocular peduncles. The survival was at 55, 7% for ablated females, and 47, 3% for intact females. The food intake was superior in ablated females (87%) than intact (77, 5%), which carried a superior change rate in weight and length in ablated females. The ablation not only showed a reduction in the number of days for the first molt compared to the intact females, but also a synchrony of molting in intervened females. A explorative study in biochemical variables was conducted, and circulating levels of hemocyanin and total proteins were significantly lower in ablated females than intact females.*

*The application of the ocular ablation in females in culture of *R. typus* increased growth in weight and length, compared to intact females.*

Introduction

The shrimp were captured by traps in the rocky submareal of caleta Chome (36°46'S, 73°12'W), in the Hualpén comuna, 22 kilometers off Concepción.

A selection was realized in base of the integrities of the ocular peduncles of 24 females with a mean size of 18mm, and a mean weight of 5,3 g, later were transported to two aquariums of 40 L with cold water (12-14°C), with a feeding regime based on *Perumytilus purpuratus* during 1 week. The water of the aquariums was changed manually in a 50%, previously filtered. Mortality and molts (Fig 3) were monitored daily. Once the acclimation was finished, the females were again chosen, and their weight and length measured, to be destined at random in the respective treatments: 12 females ablated and 12 females intact.

The females are deposited individually in a plastic container with cold water to diminish the effect of the intervention.

The females are accommodated in absorbent tissue in such a way that one ocular peduncle is exposed.

Then, the ablation is done, by knotting a piece of disinfected string of 15 cm of length in the base of the peduncle, making the knot forcefully (Fig 1).

Then the females are returned to the corresponding aquarium (Fig 2).

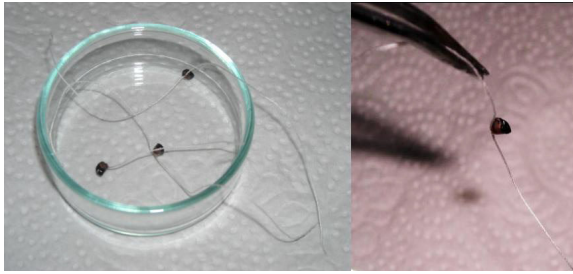


Fig 1: Ocular peduncles



Fig 2: Ablationated females



Fig 3: Exuvy of ablationated female



Fig 4: Hemolymph

Results

Fig 5: Increment of weigh and length of ablationated females v/s intacts.

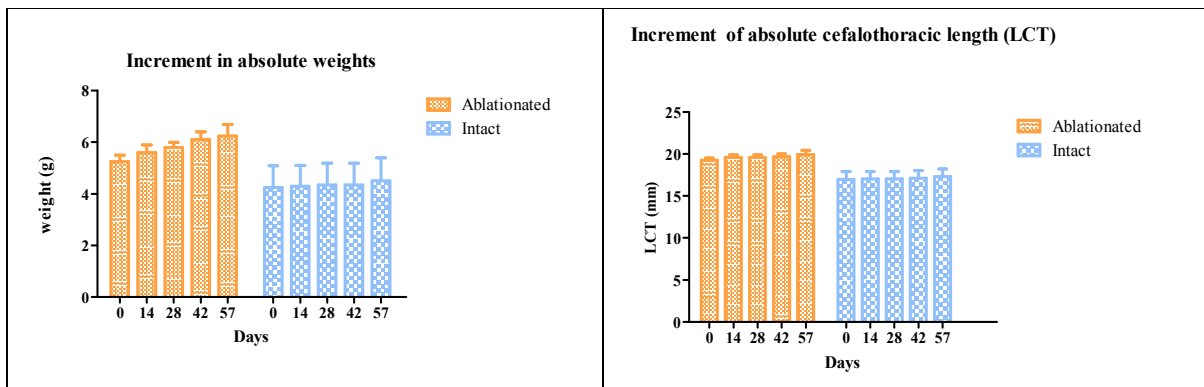


Table I: Extracted and modified of Tabla IX.- Estimado de clases anuales y frecuencia de mudas en *R. typus* (Martínez & Arana 1983).

Age (years)	Lc (mm) Von Bertalanffy	Nº of molts	Range of days between molts
1	8,83	17	21,5
2	16,63	11	33,2
3	20,75	3	121,7
4	23,66	3	121,7
5	25,72	1	365
6	27,18	1	365

Table II: Frequency of molting in ablationated *R. typus*

	Age (years)	mean LCT	Range of days between molts
Intact	2	15,8	29
Ablationated	3	18,7	37

Table III: Concentration of hemocianin and total proteins in ablationated and intact females

Mean weigth (g) Ablationated	Hemocianin mg/mL*g	Total proteíns mg/mL*g	Mean weigth (g) Intact	Hemocianin mg/mL*g	Total proteíns mg/mL*g
6,7	17,73	22,2	5,4	32,65	28,63
5,8	11,07	24,64	3,6	34,77	38,54

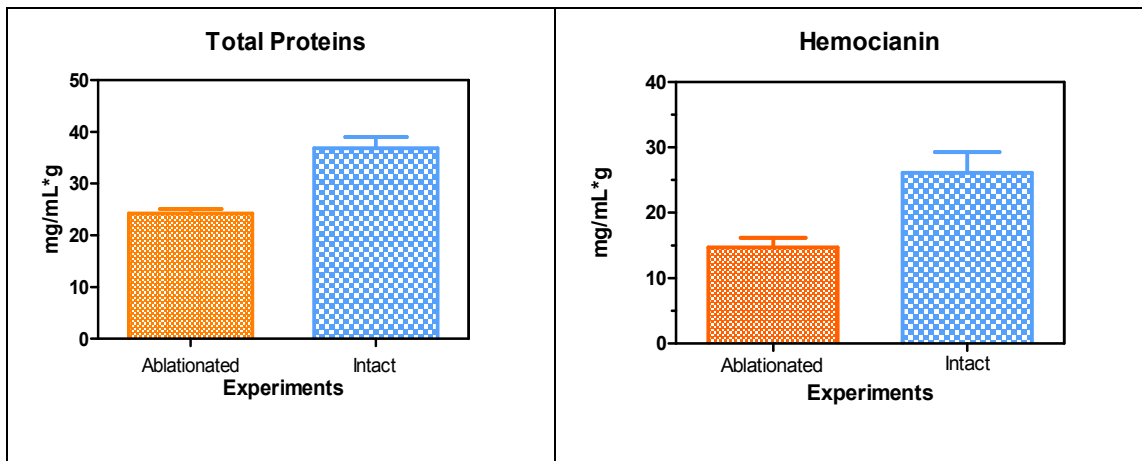


Fig 6: Concentration of total proteins and hemocianin in ablationated and intact females.

Conclusion

Significative evidence was found in the increased weight and length between ablationated and intact females.

The ablationated females presented a reduction in the number of days between molts.

The cycle of molting in intact females was the same for females in their natural state.

The concentrations of hemocianins and total proteins were superior in intact females than ablationated ones.

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