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單双眼柄切促進刺龍蝦(Panulirus Japonicus)成長之效果

鍾國仁・林忠仙

Growth-enchoncing Effects of Uni-and Bi-lateral Eyestalk Ablation on Spiny Lobster *Panulirus Japonicus*

One group of uni-lateral-eyestalk-ablaton with one controled group and three groups were conducted to assess the enchancing effects of eyestalk ablation on growth of spiny lobster. The experiment was taken for 3 months Water temperature ranged from 23.0°C. to 26°C. The salinity of sea water was 33-35ppt The space of containers were (2XTotal Body Length)^{2}mm^2 and the depth of water was 20cm.

The results showed that uni-lateral-ablation induced pronounced increment of carapace length and body weight. When carappace ength of bilateral ablated spiny lobster was about 50mm, it got no larger increment in carapace length and body weight than that of un-ablation. On the contrary, there were significant different in increment of carapace length and body weight between bi-lateral ablation and unablation as carapace length being about 83.4mm and 67.4mm. The survival percent of bi-lateral ablation in each group was 83% of 83.4±3.0mm carapace length, 58.3% of 67.4±2.4mm carapace length, 66.4% of 50.0±2.2mm carapace length, and of uni-lateral ablation was 100% of 55.3±2.6mm carapace length.

前　言

以往報告認爲龍蝦（Hmarus americanus）經双眼柄切後很少能活過第三次脫殼[8][9]。又有些報告認爲適當的餌料能提高双眼柄切除龍蝦之活存率[1][2][3]。亦有報告認爲不同時期或不同大小的龍蝦對双眼柄切除有着不同的反應[8]。而諸多報告皆認爲祇要能控制活存率，則眼柄切除於龍蝦養殖的實用性是很可行的。

試驗已證實双眼柄切除能促進提高*Panulius Japonicus*的脫殼頻率及成長速度[5][10]。但双眼柄切除後造成龍蝦生理失常，致易死亡。爲了能實用眼柄切除於龍蝦養殖，我們進行了本試驗，以更進一步了解眼柄切除對龍蝦之影響。

材料與方法

試驗所用之龍蝦皆於民國70月7月至9月在臺東縣成功鎭沿海所捕獲的。經蓄養至少一個月後，於同一日內切除左側眼柄，一星期後再同時切除右側眼柄。試驗期間，水溫約23.0～26.0°C，海水以半密閉循環系統(Semi-closed system)處理[7]，水流約 300公升／小時，試驗在120×60×60cm^{3}之玻璃纖維（F. R. P.）水槽中進行。每隻龍蝦皆個別置於（2×全體長）^{2}mm^{2}之黑色塑膠籠中。每日以帶脫蝦肉餵食，但缺餌料時以花枝肉，魚肉或鮪魚肝餵食。每次脫的殼未立刻取去[6]。試驗共進行3個月

試驗有4大組，每組具試驗組與對照組，每組有12尾龍蝦，雌雄各半，其中三組試驗組龍蝦施切除雙眼柄（BEA），每組皆有未切除眼柄（NEA）龍蝦與之對照，另一組龍蝦祇切除單眼柄（UEA），亦有未切眼柄龍蝦與之對照。各組龍蝦之頭胸長（CL-carapace Length），與體重（BW-Body

weight) 皆示於表一。

結　果

眼柄切除後第二天死亡情形爲第Ⅱ組死2尾，第Ⅲ組死1尾。試驗經過三個月，各組頭胸增長率、體重增重率及活存率皆示於表一。試驗結果，除第Ⅲ組外，各組眼柄切除龍蝦之增長及增重率顯着大於對照組。但試驗期間以第Ⅲ組之成長最佳，顯着大於其它各組，而以第Ⅰ組之成長率最低。然而除第Ⅲ組外以第Ⅰ組之活存率最高，第Ⅱ組最低。各組試驗雌雄間成長之比較無顯着之差異，所以合併納入統計比較。經過眼柄切除後，龍蝦呈不均勻的成長，所以變異數增大，尤其成長率愈高組其變異數增大愈甚。

Table I. The increment of carapace length and body weight and of each group survival percents of spiny lobster for the duration of experiment.

Item / Groups		Initial		Final		Increment %		Percents of Survive
		CL(mm)	BW(g)	CL(mm)	BW(g)	CL	BW	
BEA	Ⅰ	83.4±3.0	239.8±19.6	87.7±5.5	269.5±22.2	5.2	12.4	83.0
NEA	Ⅰ	80.1±2.5	198.0±15.0	81.6±4.9	209.7±18.7	1.9	5.9	100.0
BEA	Ⅱ	67.4±2.4	121.5±10.3	77.4±4.7	180.3±23.1	14.8	48.4	58.3
NEA	Ⅱ	65.2±2.2	111.6± 6.7	70.3±2.7	140.9±15.7	7.8	26.3	87.5
BEA	Ⅲ	50.0±2.4	49.3± 5.4	59.8±5.1	85.4±19.0	19.5	73.4	66.4
NEA	Ⅲ	48.9±2.8	45.2± 7.7	57.5±2.5	75.2±10.5	17.9	69.9	87.5
BEA	Ⅳ	55.3±2.6	68.2± 6.9	64.7±3.6	113.3±14.3	16.9	66.1	100.0
NEA	Ⅳ	54.8±2.6	65.2± 8.3	61.3±2.9	95.6±11.7	11.8	46.6	100.0

討　論

各組龍蝦經眼柄切除後，成長率皆較佳，如此則證明切除眼柄有促進 *Panulirus Japonicus* 成長之效果。第Ⅰ組之試驗組龍蝦之增重百分率雖不高，但愈大的蝦每次脫殼後的增重量却愈大。第Ⅲ組切除眼柄龍蝦之成長未顯着大於對照組，顯示眼柄切除對促進成長無顯着作用。這種現象會發生在何種體型範圍或時期，將有待更進一步研究。第Ⅲ組龍蝦經切除單眼柄後其成長速度亦甚快，且其活存率達百分之百。但這種處理可作用於每種體型之龍蝦嗎？有待更進一步之研究。因爲試驗設計不佳，所以這裡不討論比較試驗單双眼柄切除對促進龍蝦總生產量之效果。

摘　要

1.各組試驗組以第Ⅲ組成長最佳，但這組龍蝦經眼柄切除後其成長未顯着大於對照組。第Ⅲ組成長次之，再者第Ⅱ組，末了第Ⅰ組。

2.單眼柄切除亦能促進成長，且活存率爲百分之百。

3.双眼柄切除龍蝦之活存率以第Ⅰ組最佳，第Ⅲ組次之，第Ⅱ組最低。

4.双眼柄切除後龍蝦成長較不均勻，故體重與頭胸長之變異情形較大。

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