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Experimental Studies on Susceptibility of *Aedes togoi* with *Brugia malayi* in Cheju-Island, Korea*

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INTRODUCTION

Many studies have been reported on the role of various kinds of mosquitos in the transmission of malayan filariasis in the different localities in the world. In Japan, *A. togoi* was proved from the evidences of natural and experimental infections by the species of this filaria as the most important vector of *Brugia malayi* in a small islet called Hachijo-Koshima, where was only known endemic area of malayan type of filariasis in the country (Sasa, 1966).

Several field observations on the role of *A. togoi* of malayan filariasis in Cheju-Island, Korea have been conducted by some workers; Lee et al. (1964) reported one of the females of *A. togoi*, infected with two mature larvae and one sausage form larva of *B. malayi* in Cheju-Island. Chun(1968) also described that the natural infection rates with larvae of all stages were from 2.5% to 9.7% according to the areas surveyed. Recently, Katamine et al. (1970) have reported that a total of 27 from 308 *A. togoi* examined were found infected with mature larvae and only two from 504 *Culex pipiens pallens* harboured young larvae in Cheju-Island. From the above observations on the natural infections, it is evident that *A. togoi* plays a great role as an important vector of malayan filariasis in Cheju-Do.

In this sense, authors attempted to carry out the laboratory infections of *A. togoi* with *B. malayi* in order to know the susceptibility of the local strain to the parasite at Cheju Island.

MATERIAL AND METHODS

Selection of donors: The preliminary night blood survey was performed in a small village in Cheju-Do with a population of about 250, to screen microfilaria positive cases, forty nine out of 158 examined were found infected and among these positive cases, twenty three (6 males, 17 females) persons were selected as donors which were divided into A and B; two groups according to their microfilaria densities; the average microfilaria densities per cu. mm. of blood in the group A and B were 0.58 and 7.06 respectively (Table 1).

Mosquitos used: Specimens of *A. togoi* in the pupal stage were collected at the late of August from their breeding places of tide water rock pools scattered in rocky seashores, north-western part of Cheju-Island. These pupae caught in the field in the breeding pans were kept in an 18 inch-cube net cage in order that emerging adults can be retained and some batches of the female adults were separately kept alive in the above same sized screened cages. During the whole period of

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Table 1. Feeding experiment in A and B donor groups.

Feeding time: 23:00-23:30 or 23:00-24:00
Temperature: 25°C-27°C, Relative humidity: 80%.

No.	Group A				No.	Group B			
	Mosq. / Donor Sex(Age)	No. of mosquitos Used/engorged	Mf. density per 40 cu. mm.	cu. mm.		Mosq. / Donor Sex(Age)	No. of mosquitos Used/engorged	Mf. density per 40 cu. mm.	cu. mm.
1	F. (11)	20/ 6	23	0.58	1	F. (11)	20/ 5	819	20.48
2	F. (39)	20/13	27	0.68	2	F. (14)	20/17	190	4.75
3	F. (12)	20/ 7	17	0.43	3	M. (7)	10/ 2	129	3.23
4	F. (34)	20/18	5	0.13	4	F. (15)	20/17	155	3.88
5	M. (12)	20/ 5	7	0.18	5	F. (13)	20/12	179	4.48
6	F. (8)	5/ 2	6	0.15	6	F. (23)	20/13	132	3.30
7	M. (19)	20/11	4	0.10	7	F. (36)	20/13	402	10.05
8	M. (4)	5/ 1	50	1.25	8	F. (12)	20/ 7	113	2.83
9	M. (10)	10/ 3	20	0.50	9	F. (42)	20/12	826	20.65
10	F. (35)	20/12	66	1.65	10	F. (29)	20/15	100	2.50
11	F. (58)	20/15	31	0.78	11	F. (59)	20/18	178	4.20
					12	M. (14)	20/10	174	4.35
	Total	180/93	256			Total	230/141	3,387	
	Mean Rate of engorgement: (51.7%)		Mean mf. density per cu. mm. : 0.58			Mean Rate of engorgement: (61.3%)		Mean mf. density per cu. mm. : 7.06	

* Mf: Microfilaria

observations, the above screened cages were covered with wet towels over the top and sides for providing the atmospheric humidity under room temperature(25°C-27°C). After emerging, about 400 female adults were fasted for several hours before being allowed to feed with a blood meal of donors. Thereafter, for keeping adults alive, they were supplied by small pieces of absorbent cotton saturated with 10 per cent glucose solution, hung inside the rearing cages. A certain number of mosquitos without exposure to infection was stored in the net cage under the same conditions which were provided on the cages for the mosquitos infected, for comparative observations on death rates.

Method for feeding : Most female adults were reluctant to feed on the arm of donors in the screened cages, therefore paper cup technique was applied. The top of the paper cup (6 cm top diameter×5 cm bottom diameter ×10cm height) was covered with wet gauze and tied with rubber band. The bottom of the cup was provided with a round window, fixed with scotch tape (25mm diameter), which is

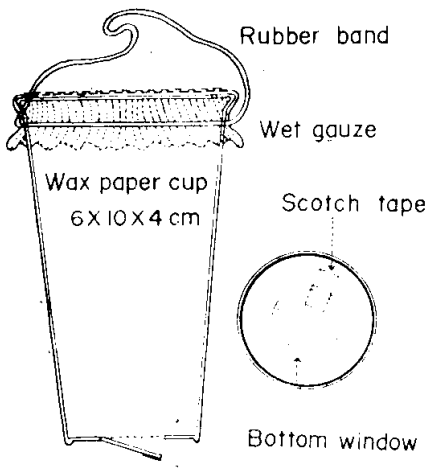

Fig. 1. Illustrated paper cup.

Table 2. Death rates of *Aedes togoi* between the infected and non-fed control.

Days in captivity	Infected Groups									Non-fed. control		
	A*			B**			A+B			Total No. observed: 200		
	No. observed: 33			No. observed: 72			Total: 105					
	Dead	Alive	Death rate(%)	Dead	Alive	Death rate(%)	Dead	Alive	Death rate(%)	Dead	Alive	Death rate(%)
0— 6	0	33	—	0	72	—	0	105	—	0	200	—
7— 9	0	33	—	11	61	15.28	11	94	10.48	4	196	2.0
10—12	2	31	6.06	6	55	8.33	8	86	7.62	8	188	4.8
13—15	5	26	15.15	13	42	18.05	18	68	17.14	16	172	8.0
16—18	3	23	9.09	3	39	4.17	6	62	5.71	21	151	10.5
	10	10/33	30.3	33	33/72	45.8	43	43/105	38.0	49	49/200	24.5

* Group A : A batch of mosquitos fed on carriers with an average mf. density per cu. mm. of 0.58.
** Group B : A batch of mosquitos fed on carriers with an average mf. density per cu. mm. of 7.06.
T-test : Group A and Group B : $0.1<P<0.2$
Infected groups and non-fed control: $0.01<P<0.02$

easy to open and close (Fig. 1). Five to twenty female adults collected with aspirator from the net cages were put through bottom window in one paper cup which was hung with rubber band on the forearm, contacted with the gauze surface of a cup. After feeding for about 30 min. to 1 hour at 23:00-24:00 p.m., the engorged females were transfered into the screened cage to keep them alive.

Examination of mosquito : For the counts of mature larva, a sample of mosquitos, dead or alive was examined each day by dissection for mature larvae seven up-to 18 days after the exposure to infection.

RESULTS

According to our previous work, the first appearance of the mature larva in *A. togoi* which was experimentally infected was in about 8 to 9 days after exposure to infection (Kim et Seo, 1968). Therefore, for the estimation of mature larva rates and density, dissection and examination of fed specimens were made each day after seven up to 17 days. In order to know a laboratory index of this local strain of *A. togoi* to the parasite, our observation was only concentrated on the 3rd stage mature larva in the mosquito from the epidemiological point of view.

Considering that the intake of microfilaria by mosquitos in a blood meal supposedly depends upon the microfilaria density of a donor, although it has been controversial. Experiments were carried out on the two groups of donors, A and B, which greatly differ from each other in their average microfilaria densities. As shown in Table 1, feeding rate was fairly high, applied the paper cup technic. On the contrary, it was extremely low and mostly failed in the cage.

As one of factors involved in the dynamics of malayan filariasis transmission the activating period of vector mosquitos in certain endemic areas should be taken into consideration. Consequently it is influenced by death and survival rates of the infected mosquitos. In Table 2, death rates of mosquitos were shown for the comparison among the infected group and non-fed control. Death rates of the infected group A and group B were 30.3% and 45.8% respectively. In the non-fed control it was 24.5% which showed distinctly lower percentage than the average 38.0% of the infected groups($0.01<p<0.02$). And it is as-

Table 3. Results of experimental infections of *Brugia malayi* to *Aedes togoi*.

Date	Group	Days after engorg.	No. of mosquitos Dissected(a)	No. of mosquitos Infected (c)	% with mature larvae	No. of larvae(III stage) found in Head	Thorax	Abdomen	Other	Total No.(b)	Mature larva density (b/c)	Index of mature larva (b/a)	Index of exp. infect. $\left(\frac{b}{a}/m\right)$
Aug/29		9	5	1	20.0	16	1	2	—	19	19.0	3.8	$\frac{b}{a}=\frac{108}{74}$
30		10	3	2	66.7	3	7	16	—	26	13.0	8.7	$=1.46$
31		11	5	3	60.0	3	1	3	—	7	2.3	1.4	
Sept/1		12	5	1	20.0	5	4	2	—	11	11.0	2.2	$m=0.58$
2		13	10	1	10.0	1	3	5	—	9	9.0	0.9	
3	A	14	10	4	40.0	7	2	1	—	10	2.5	1.0	$\therefore\frac{b}{a}/m=\frac{1.46}{0.58}$
4		15	10	3	30.0	3	5	2	2	12	4.0	1.2	$=2.52$
5		16	10	2	20.0	5	4	1	—	8	4.0	0.8	
6		17	16	3	18.7	0	5	1	—	6	2.0	0.4	
Aug/29 Sept/6	Total		74	20		41	32	33	2	108	5.4	1.46	

Group A : 11 donors, whose microfilaria density per cu. mm. is 0.58(m) in average

sumed that from the death rates in two groups, the mosquitos fed on the donors with high microfilaria density may die before reaching the full development of larvae.

In order to learn the susceptibility of local strain of *A. togoi* to the larvae of *B. malayi*, and to know the relation between the microfilaria density of a donor and mature larva density of a mosquito, mosquitos which belong to two groups A and B were each day dissected at the period of full development of filaria and the mature larvae were counted. As indicated in Table 3 and 4, the experimental infection rates with mature larvae of mosquitos, *A. togoi*, obtained by these feeding experiments on two groups of different microfilarial counts, were 27.0% in group A and 44.8% in group B($0.001<p<0.01$). During these observations, no immature larvae were found in both group A and group B, therefore the maturity rate of the larvae in this mosquito was considered 100% in two groups at least in the period of our observation.

From the above results, the infection rate with mature larvae was higher in the group B with high microfilaria density donors than in the group A with lower microfilaria density donors. On the other hand, total number of mature larvae obtained from the infected mosquitos were 108 and 475 in each group, then mature larva density in other words, the average number of mature larvae per infected mosquito, in group A and B were 5.4 and 8.4 respectively. If index of experimental infection is expressed by the expected number of mature larvae from the mosquito fed on a donor with 1 microfilaria density per cu. mm. in the peripheral blood, it is represented as follows:

$$\text{Index of experimental infection} = \frac{\text{Number of mature larvae (b)}}{\text{Number of mosquito fed (a)}} \times \frac{1}{\text{Microfilaria density per cu. mm. (m)}} = \frac{b}{a}/m$$

As shown in Table 3 and 4, indices in two groups A and B were 2.52 and 0.52 respectively. From these indices, it is to be noted that although experimental infection rate and mature larva density in group B were higher than those in group A, index value in group B with higher microfilaria density was lower than that in group A. In other words, the average number of mature larvae counted

Table 4. Results of experimental infections of *Brugia malayi* to *Aedes togoi*.

Date	Group	Days after engorg.	No. of mosquitos		% with mature larvae	No. of larvae(III stage) found in					Mature larva density (b/c)	Index of mature larva (b/a)	Index of exp. infect. $\left(\frac{b}{a}/m\right)$
			Dissected(a)	Infected (c)		Head	Thorax	Abdomen	Other	Total No.(b)			
Aug/29	B	9	10	7	70.0	37	53	81	—	171	24.4	17.1	$\frac{b}{a}=\frac{475}{130}$
30		10	5	3	60.0	1	5	6	—	12	4.0	2.4	
31		11	10	5	50.0	4	28	24	—	56	11.2	5.6	$=3.65$
Sept/1		12	15	4	26.7	14	18	8	—	40	10.0	2.6	
2		13	20	9	45.0	14	19	42	—	75	8.3	3.8	$m=7.06$
3		14	19	8	42.1	8	22	8	8	46	5.8	2.4	
4		15	21	8	40.0	20	17	8	1	46	2.9	2.2	$\therefore\frac{b}{a}/m=\frac{3.65}{7.06}$
5		16	20	8	40.0	12	6	5	—	23	2.9	1.6	
6		17	10	3	30.0	1	4	4	—	9	3.0	0.9	$=0.52$
Aug/29 Sept/6		Total	130	55		111	172	186	9	475	8.4	3.65	

Group B: 12 donors, whose microfilaria density per cu. mm. is 7.06(m) in average

in a certain group of mosquitos was not so exactly parallel to the average microfilarial density of the donors on whom mosquitos were fed. The mature larvae densities and the indices of infective larvae in both group A and B appeared to show decreasing tendencies according to the course of infections from 9th day to 17th day after exposure to infection. This may be caused by escaping of mature larvae from the tip of the proboscis of mosquito while they were feeding on sugar solution in the captivity. In this experiment there were some mature larvae escaped out in the saline solution, in which the mosquitos were stored just after death.

Upon dissecting the infected mosquitos, the locations collected the mature larvae inside the body of mosquito were recorded mainly on three parts, such as head, thorax and abdomen. As seen in Table 3 and 4, it seemed no distinct discrepancies on the distribution in the above three parts, at least after reaching to their full maturity.

DISCUSSION

Aedes (*Finlaya*) *togoi* Theobald breeds mostly in tide water rock pool in rocky seashore in Cheju-Do and is one of the most abundant mosquitos with vigorous biting attack to human in this area. The natural infection of this mosquito to *B. malayi* has been also been known by several investigators. Thus the role of *A. togoi* in the transmission of malayan filariasis does certainly appear so important in the above endemic areas of Cheju-Do having so many rock pools for their breeding places.

Chu(1963) reported the experimental infection of *A. togoi* with *B. malayi* using the artificially infected monkey hosts in Taiwan without giving any detailed analysis on the susceptibility of the mosquito. However, the susceptibility of this local strain of *A. togoi* to *B. malayi* has never experimentally been proved yet.

Therefore the infection rate of mosquito with mature larva, the rate of maturity, index of mature larva and index of experimental infection were hardly known. As Table 5 indicates in an earlier period, Mochizuki (1913) and Yamada(1927) studied in Japan on the susceptibility of *A. togoi* with *W.*

Table 5. Experimental infections of *Aedes togoi* with the species of filaria.

Investigator	Species	Temp.	Mf. density per cu. mm	Dissect. period	No. of mosq. dissect.	Infect. rate	Maturity rate	Index of mature larvae	Index of exp, infection
Mochizuki, 1913	*Wuchereria bancrofti*	—	—	15-16	15	—	97.4	2.53	—
Yamada, 1927		—	—	12-18	20	70.0	96.1	8.55	—
Omori, 1962		—	0.017	14-16	15	13.3	100.0	0.20	11.76
Nakamura, 1964	*Wuchereria bancrofti*	24°C	0.59	15-57	53	79.2	100.0	2.3	3.89
			4.73	19-54	38	71.1	99.3	7.9	1.69
			7.17	15-65	57	80.7	98.6	10.2	1.42
		27°C	0.59	12-52	101	75.2	98.3	2.9	4.91
			4.73	12-54	25	80.0	95.1	5.4	1.14
Authors, 1973	*Brugia malayi*	25°C ~ 27°C	mean 0.58	9-17	74	27.0	100.0	1.46	2.52
			mean 7.06	9-17	130	44.8	100.0	3.65	0.52

bancrofti. Omori (1962) reported that the index of infective larva of *W. bancrofti* in *A. togoi* was 0.20 from his study. Nakamura(1964) carried out the experiments to know the influence of rearing temperature of infected mosquitos upon the development and longevity of larvae of *W. bancrofti* in the body of mosquito. And he concluded that *A. togoi* seems to be as highly susceptible to *W. bancrofti* as *Culex pipiens pallens*, so far as the experimental infection rate is concerned. These results shown in Table 5 are not directly to be compared with the data obtained in our experiments because of different methods applied for the feeding of mosquito and different observation period. However, it is of interest that the experimental infection rates with mature larva were higher in the mosquitos fed on the donors having high microfilaria density, however the indices of experimental infection were lower in the mosquitos fed on the donors with high microfilaria density.

It seems natural that the infection rates of mosquitos are closely related with the microfilarial density of donors. However the intensity of infection, in other words, index of infective larvae is not precisely proportional to the microfilarial counts of donors, because it is influenced by the death rates of the infected mosquitos, uptake number of microfilaria for engorged females and so on.

Regarding death rate, it appears that the death rate in infected mosquitos is higher than that in non-fed control, as shown in Table 2. This was also confirmed by Nakamura(1964) who observed the heavy infection of filaria caused a harmful effect on the longevity of the mosquito. He also noticed that fewer mature larvae were detected in the mosquitos survived for longer days. In the present study, the above mentioned tendency was apparently observed. The increase of the number of larvae escaped from the proboscis during the feeding of sugar solution may be one of possible explanations.

According to Omori(1958), in case the microfilarial density is as few as 1 or 2 in 20 cu. mm. of blood, the frequency distribution of microfilaria per engorged mosquito follows Poisson distribution. While the microfilarial count is more than that of the above, it

follows aggregated type of distribution.

Recently Omori et al. (1968) summarized the relation between the mean uptake number of microfilaria for a batch of mosquitos and the infection rates, and mentioned that the numbers of microfilariae in mosquitos fed simultaneously on a carrier follow Poisson distribution or negative binomial distribution. In case of the former, the expected infection rate(1-p(0)) is given by $1-e^{-m}$; in the latter, the rate is $1-(1-m/k)^{-k}$ (mean uptake number of microfilariae for engorged females of the batch). In other words, from the explanations made by the above two investigators the expected uptake number of microfilariae in peripheral blood by mosquitos may not be directly proportional to the microfilarial counts because of the different distribution patterns between the higher and the lower densities of microfilaria in blood.

On the contrary, Wharton(1957) described the efficiency of *Mansonia longipalpis* as an experimental vector of *B. malayi* and reported from the results of his experiments that the mean number of larvae per mosquito after 10.5 to 11.0 days is in direct proportion to the microfilarial count, at the time of feeding, which was in the wide range from 0.25 to 25.0 per cu. mm. of blood in his experiments, even when large number of microfilariae are ingested and that the mean number of larvae per mosquito was approximately five times the number of microfilariae per cu. mm. of the carrier's blood. He also noticed that the percentage of mosquitos infected was closely related to the microfilarial density.

In this connection, further detailed studies on the relation between the microfilaria density in man and development of larvae of *B. malayi* in the mosquitos, *A. togoi* were strongly suggested.

From the results obtained by the above previous workers including our observations, the susceptibility of various mosquitos to the species of filaria should be considered with all of the following factors, such as the experimental infection rate of mosquito, rate of maturity, index of mature larvae, mature larvae density and index of experimental infection. Particularly, considering the significance of microfilarial count of carriers, index of experimental infection, which is obtained by dividing mature larva index with microfilaria density per cu. mm. must be calculated.

In this sence, *A. togoi* appears to be indicating high susceptibility to *Brugia malayi*.

SUMMARY

Experimental infection of the local strains of *A. togoi* with *B. malayi* was carried out in order to know the susceptibility to this periodic malayan type of filaria in Cheju-Island, Korea. About four hundred females mosquitos of *A. togoi*, used in this experiment were reared from pupae and older larvae collected from tide water rock pools in rocky seashores in Cheju-Island. Applying paper cup method of feeding, these mosquitos were fed with the blood meals of 23 donors, divided into two groups A and B whose microfilarial densities per cu. mm were 0.58 and 7.06 respectively at 23:00—24:00 p. m. Another batch of mosquitos was set for non-fed control.

After period of full development of larvae in mosquito, counts of mature larvae by dissecting and examining the infected specimens were made every day and the number mature larvae found according to the location was recorded. The results obtained were summarized as follows:

The paper cup method was successful for

feeding of mosquitos with blood meals of donors. The engorged mosquitos were found more than 50%.

The highest death rates(45%) was observed in the infected mosquito group B, fed with higher microfilaria density. On the contrary, the lowest(24.5%) was in the non-fed control ($0.001<p<0.01$).

Experimental infection rate in group B (44.8%) with mature larvae was higher than that(27.0%) in group A ($0.001<p<0.01$).

Total number of mature larvae found in groups A and B were 108 and 495 respectively. Mature larva density, index of mature larvae and index of experimental infection were separately calculated in both group A and group B. These values were 5.4, 1.46 and 2.52 respectively in group A and 8.4, 3.65 and 0.52 in group B.

There was seemingly no significant meaning on the distribution of mature larvae inside the mosquito after this full development.

From the above data on the infection rate, mature larva density, index of mature larva and index of experimental infection, *A. togoi*, a local strain of Cheju-Island, seems to be highly susceptible to *B. malayi*.

—국문초록—

도—고 숲모기(*Aedes togoi*)의 馬來糸狀虫에 대한 感受性에 관한 實驗的硏究

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濟州道에 있어 馬來糸狀虫症 (Malayan filariais)의 가장 重要한 媒介모기로 알려져 있는 도—고 숲모기 (*Aedes togoi*)는 그 自然感染狀況이 밝혀져 있을뿐 아니라(李, 1964; 全, 1968) 馬來糸狀虫(*Brugia malayi*) 仔虫에 의한 實驗的 感染에 의하여 모기 體內에서의 形態 및 發育狀態등도 究明된 바 있다(金 및 徐 1968). 著者들은 濟州道産 *A. togoi*의 馬來糸狀虫에 대한 感受性을 밝히고 이 모기의 濟州道에 있어서의 馬來糸狀虫症 傳播能力을 測定할 目的으로 아래와 같은 實驗的 硏究를 試圖하였다.

實驗에 使用한 약 400마리의 *A. togoi* 成虫은 海岸地帶 岩穴(rock pool)에서 採取한 번데기(pupa) 또는 老幼虫으로 부터 飼育羽化 시킨 것이었다. 23명의 糸狀虫 仔虫 陽性者를 選擇하고 仔虫濃度(Microfilaria Density)에 따라 두 群으로 나누어 밤 11시에서 12시까지 약 30分 내지 한시간 이들 모기에게 吸血케 하였다. 종이컵법(Paper cup method)에 의하여 前膊皮膚에서 吸血케 하였고 平均仔虫 濃度가 0.58인 供血者를 吸血한 모기群(A)과 平均仔虫濃度 7.06이었던 모기군 (B)을 따로 飼育虫網에 分離하고 充分한 濕度를 維持하며 室温에서 10%葡萄糖液으로 飼育하였다. 모기 自然死亡率을 알기 위하여 非吸血 모기 200마리를 別途 飼育虫網에 保存하고 吸血모기 群과 比較하였다. 成熟幼虫이 모기 體內에 出現한 以後부터 各群 飼育網에서 每日 一定數의 모기를 死亡 또는 生存을 가리지 않고 剖檢하고 發見된 成熟幼虫의 數 및 모기 體內에서의 發見 部位를 記錄하고 다음과 같은 成績을 얻었다.

종이컵법에 의한 吸血은 飼育虫網內 吸血보다 오히려 成功的이었으며 모기 吸血率은 50%를 넘었다. 飼育모기群에서 모기 死亡率은 (45%) 가장 높았으며 非吸血 모기 대조群에서의 死亡率(24.5%)이 가장 낮았다. ($0.001<P<0.01$). 成熟幼虫이 된 以後에 모기 體內에서의 發見部位別 分布狀況에는 큰 意義가 없는것 같다. 成熟幼虫으로 까지의 實驗感染率을 보면 A群에서 44.8%, B群에서 27%였으며($0.001<P<0.01$) 平均 仔虫濃度가 높은 供血者로부터 吸血한 모기群에서 感染率이 높았던 것을 알수 있었다. 剖檢에 의하여 A, B 各群에서 採取한 成熟幼虫 總數는 各各 108 및 475였고 感染率과 같이 B群에서 많았다. 한편 成熟幼虫濃度 (Mature Larva Density) 즉 感染 모기당 發見幼虫數는 A, B群에서 各各 5.4 및 8.4이었고 成熟幼虫 指數 (Index of Mature Larvae) 즉 飼育모기當 發見 幼虫數는 A, B群에서 各各 1.46 및 3.65였다. 그러나 이와는 對照的으로 實驗感染指數 (Index of Experimental Infection) 즉 成熟幼虫指數를 供血者 單位血液當仔虫濃度로 나눈 수는 모기가 每 cu.mm.當 한마리의 (Microfilaria)仔虫을 末梢血液에 保有한 仔虫陽性者의 血液을 吸血하였을 때 모기 體內에서 發育이 豫想되는 成熟幼虫의 數는 A, B 群에서 各各 2.52 및 0.52였다. 따라서 高仔虫濃度의 陽性者를 吸血한 모기라도 感染率 및 成熟幼虫數는 높을 수 있어도 實驗感染指數는 반드시 높을 수 없는 것 같다. 따라서 實驗感染指數의 算出은 特定 모기의 糸狀虫에 대한 感受性을 測定 하는데 크게 考慮하여야 할 것이다.

위의 成績으로 미루어 볼 때 濟州道 산 도—고 숲모기 (*Aedes togoi*)는 馬來糸狀虫에 대하여 相當히 感受

性이 높은 것을 推測할 수 있다.

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