



E-ISSN: 2320-7078

P-ISSN: 2349-6800

JEZS 2018; 6(1): 1562-1563

© 2018 JEZS

Received: 04-11-2017

Accepted: 05-12-2017

Jyoti Raama Bhardwaj

Department of Entomology,
IGKV, Raipur, Chhattisgarh,
India

Jaya Laxmi Ganguli

Department of Entomology,
IGKV, Raipur, Chhattisgarh,
India

Richa Choudhary

Department of Entomology,
IGKV, Raipur, Chhattisgarh,
India.

Rajeev Gupta

Department of Entomology,
IGKV, Raipur, Chhattisgarh,
India

Studies on parasitization of *Corcyra* larvae reared under different diets by the larval ecto-parasitoid, *Bracon* sp

Jyoti Raama Bhardwaj, Jaya Laxmi Ganguli, Richa Choudhary and Rajeev Gupta

Abstract

The experiment was conducted in The Biological Control Laboratory, Department of Entomology, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.). The purpose of this research was to determine the effect of the difference in parasitization of *Corcyra* larvae reared under different diets by ecto-parasitoid *Bracon* sp. In experiment framed to see the difference in parasitization of *Corcyra cephalonica* larvae by *Bracon* sp., five larvae were selected and reared from thirteen different diet treatments and covered using separate small petridishes (plate). Number of eggs laid on the larvae varied significantly and was highest in T11 (rice+jowar+maize) (37.33 eggs/ 5 larvae) and minimum in T1 (rice) (2.67 eggs/ 5 larvae). Similarly the number of pupae of *Bracon* sp. were highest again in T11 (rice+jowar+maize) (31.33 pupae/ 5 larvae) and least in T1 (rice) (1.67 pupae/ 5 larvae). Highest number of male *Bracon* were seen on T5 (maize) (4.67) on T1 (rice) (0.33), where as highest number of female emergence was observed in T4 (sorghum) (21.00) and lowest on T1 (rice) (0.67).

Keywords: *Corcyra* larvae, different diets, *Bracon* sp

Introduction

Bracon hebetor Say is a cosmopolitan ectoparasitoid that attacks the larval stage of stored grain pyralid moths (Lepidoptera: Pyralidae) such as *Corcyra cephalonica* (Stainton). It has been widely used in the studies of host-parasitoid interaction because of its high reproductive rate, short generation time and considerable range of host species (Gunduz and Gülel 2005) [2]. The braconid *Bracon mellitor* Say, an arrhenotokous species is a solitary ectoparasitoid of boll weevil, *Anthonoumaus grandis* Boheman. Females of this parasitoid usually lay eggs on third instar boll weevils. Normally female oviposit only one egg or near the host (Adam's *et al*, 1996) [1]. Host feeding by *B. mellitor* adult females was observed by O'Neil (1980) [4]. He also discriminate to a certain degree between hosts previously parasitized by others females.

Material and Methods

The experiment was conducted in The Biological Control Laboratory, Department of Entomology, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.). *Bracon* is a very effective larval-ecto-parasitoid of lepidopteran larvae, and the present experiment was framed to see the difference in parasitization of *C. cephalonica* larvae by *Bracon* sp., five larvae from each treatment were taken and kept under a small petridish above the muslin cloth tied on a basin. Ten pairs of the larval ecto-parasitoid *Bracon* sp. were collected with help of aspirator and released within basin covered by muslin cloth and secured tightly with plastic cord.

Observations were also recorded after 48 hours on the number of eggs laid by *Bracon* sp. and thereby the number of grubs hatched on the different larvae reared on different hosts diets. On this basis the host preference of the larval ecto-parasitoid, *Bracon* sp was worked out and the experiment was repeated three times.

Result and Discussion

In experiment framed to see the difference in parasitization of *Corcyra cephalonica* larvae by *Bracon* sp., five larvae were selected and reared from thirteen different diet treatments and

Correspondence**Jyoti Raama Bhardwaj**

Department of Entomology,
IGKV, Raipur, Chhattisgarh,
India

covered using separate small petridishes (plate). Observations were recorded on the number of eggs laid on different larvae, and on the grubs hatched from the eggs and presented in Table. Number of eggs laid on larvae varied significantly and was highest in T11 (rice+jowar+maize) (37.33 eggs/ 5 larvae) followed by T4 (sorghum) (30.67 eggs/ 5 larvae) and T5 (maize) (27.67 eggs/ 5 larvae) and T13 (bajra+jowar+maize) (21.33 eggs/ 5 larvae). Least preferred larvae were observed in T1 (rice) (2.67 eggs/ 5 larvae).

Number of pupae of *Bracon* sp. were highest again in T11 (rice+jowar+maize) (31.33 pupae/ 5 larvae) followed by T13 (bajra+jowar+maize) (18.67 pupae/ 5 larvae), T6 (rice+wheat+bajra) (18.00 pupae/ 5 larvae) and T9 (rice+bajra+jowar) (15.33 pupae/ 5 larvae) as all grubs pupated. T4 (sorghum) (26.67 pupae/ 5 larvae) and T5 (maize) (26.00 pupae/ 5 larvae) were at par with T11 (rice+jowar+maize) and least pupae found in T1 (rice) (1.67 pupae/ 5 larvae).

It was also observed that the numbers of males were less than numbers of females. The highest number of males were seen on T5 (maize) (4.67) followed by T13 (bajra+jowar+maize)

(2.33), T9 (rice+bajra+jowar) (2.00) and T2 (wheat) (1.33). T11 (rice+jowar+maize) (4.33) was at par with T5 (maize) and least number of males were seen on T1 (rice) (0.33). The highest number of females emergence were observed in T4 (sorghum) (21.00) followed by T13 (bajra+jowar+maize) (18.33), T5 (maize) (4.30) and T6 (rice+wheat+bajra) (3.12). T11 (rice+jowar+maize) were at par with T4 (sorghum) (4.34) and lowest number of females emergence seen on T1 (rice) (0.67).

Radhika and Chitra (1997) ^[5] also noticed a significant difference in mean longevity, total number of eggs, larvae, pupae and adult of *Bracon hebetor* Say when its host *Corcyra cephalonica* (Stainton) was provided different types of diet as observed in the present studies. In their study there was a significant effect of host diet on life table parameters of *Bracon hebetor* (Say) presumably due to chemical composition and physical characteristics of host diet which were responsible to bring about such significant differences.

Similarly, Singh *et al.*, (2006) ^[6], also reported that host diet of *Corcyra cephalonica* (Stainton) had a significant effect on the development and reproduction of *B. hebetor*.

Table 6: Parasitization due to *Bracon* sp. in the larvae of *C. cephalonica* reared under different diets.

Treatments	No. of Eggs	No. of Cocoons	No. of Adults	
			No. of males	No. of Females
T1	2.67 (1.74)	1.67 (1.39)	0.33 (0.88)	0.67 (1.05)
T2	6.67 (2.67)	5.00 (2.34)	1.33 (1.34)	2.33 (1.68)
T3	11.67 (3.47)	7.67 (2.85)	0.67 (1.05)	5.33 (2.40)
T4	30.67 (5.58)	26.67 (5.21)	1.00 (1.22)	21.00 (4.63)
T5	27.67 (5.31)	26.00 (5.21)	4.67 (2.27)	18.00 (4.30)
T6	20.67 (4.60)	18.00 (4.30)	0.67 (1.05)	9.33 (3.12)
T7	8.33 (2.96)	7.00 (2.72)	0.67 (1.05)	5.00 (2.32)
T8	2.00 (1.47)	1.33 (1.27)	0.33 (0.88)	1.00 (1.17)
T9	17.33 (4.22)	15.33 (3.97)	2.00 (1.58)	6.33 (2.60)
T10	16.67 (4.14)	14.33 (3.85)	0.67 (1.05)	5.33 (2.40)
T11	37.33 (6.15)	31.33 (5.64)	4.33 (2.20)	20.33 (4.56)
T12	2.67 (1.74)	2.67 (1.77)	0.67 (1.05)	1.33 (1.34)
T13	21.33 (4.67)	18.67 (4.38)	2.33 (1.68)	18.33 (4.34)
SEM	0.19	0.17	0.14	0.17
CV	8.84	8.57	17.78	10.48
CD	0.32	0.50	0.40	0.28

Conclusion

In experiment framed to see the difference in parasitization of *C. cephalonica* larvae by *Bracon* sp., five larvae were selected and reared from thirteen different diet treatments and covered using separate small petridishes (plate). Number of eggs laid on the larvae varied significantly and was highest in treatment contain combinations of rice+jowar+maize (37.33 eggs/ 5 larvae) and minimum in solo rice (2.67 eggs/ 5 larvae). Similarly the numbers of pupae of *Bracon* sp. were highest again in T11 (rice+jowar+maize) (31.33 pupae/ 5 larvae) and least in T1 (rice) (1.67 pupae/ 5 larvae). Highest number of male *Bracon* were seen on T5 (maize) (4.67) on T1 (rice) (0.33), where as highest number of female emergence was observed in T4 (sorghum) (21.00) and lowest on T1 (rice) (0.67).

Reference

- Adams CH, Cross WH, Mitchell HC. Biology of *Bracon mellitor*, a parasite of the boll weevil. J. Econ. Entomol. 1969; 62:889-895
- Gündüz EA, Gülel A. Effects of adult age host species on development period of parasitoid *Bracon hebetor* Say (Hymenoptera: Braconidae). Journal Fact Agriculture. 2005; 20(3):31-36.
- McGovern WL, Cross WH. Affects of two cotton varieties on levels of boll weevil parasitism. [*Col. Curculionidae*]. Entomophaga, 1976; 211:123-125.
- O'Neil RJ. Competition between two boll weevil parasitoids: A laboratory study. M.S. Thesis, Department of Entomology, Texas A&M University, 1980.
- Radhika P, Chitra KC. Effect of larval nutrition of *Corcyra cephalonica* (Stainton) on the potential of *Bracon hebetor* (Say). J Insect Science. 1997; 10(1):59-60.
- Singh D, Singh RP, Tripathi CPM. Effect of host diet on life table statistics of *Bracon hebetor* (Say) (Hymenoptera: Braconidae). Biological Control, 2006; 20:165-168.