

## Breeding of *Campoletis chlorideae* Uchida (Hymenoptera : Ichneumonidae) on *Corcyra cephalonica* Stainton

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**ABSTRACT :** *Campoletis chlorideae* Uchida an early larval parasitoid of *Helicoverpa armigera* (Hübner) was successfully reared on *Corcyra cephalonica* Stainton. The comparative biology of *C. chlorideae* was also studied on *C. cephalonica*, *H. armigera* and *Spodoptera litura* (Fabricius).

**KEY WORDS :** Biology, *Campoletis chlorideae*, *Corcyra cephalonica*, rearing

Old world boll worm, *Helicoverpa armigera* (Hübner), a serious pest of cotton, pulses and vegetables is found to be parasitised by several hymenopterans of which *Campoletis chlorideae* Uchida is one of the important parasitoid (Achan *et al.* 1968, Rao 1968, Patel and Patel 1972). Mass rearing of *C. chlorideae* on *Spodoptera litura* (Fabricius) and *H. armigera* in the laboratory is difficult due to the problem in rearing of these hosts in the laboratory on a large scale. In order to find out an alternate laboratory host, *Corcyra cephalonica* Stainton was tried for rearing of *C. chlorideae*.

Life cycle of the parasitoid was studied on *C. cephalonica* in comparison with *H. armigera* and *S.litura* at  $27 \pm 1^\circ\text{C}$  and 70% RH in the Project Directorate of Biological Control, Bangalore, India during 1995-96. The moths of *H. armigera*, *S. litura* and *C. cephalonica* were bred in the laboratory and

eggs that were laid were kept at room temperature. Healthy larvae hatching from the eggs were used for the experiment. Three to four day old larvae of *H. armigera*, *S. litura* (Basarkar and Nikam 1982; Kumar, 1987 ; Lingren *et al.* 1970) and second instar larvae of *C. cephalonica* (12 - 14 day old larvae were preferred for parasitization) were exposed individually in 10 x 5 cm plastic jars for parasitisation. The larvae were then separated and reared individually in 3 x 2 cm vials for further observation. The experiment was conducted in a completely randomised design replicated ten times and the data were subjected to analysis of variance to compare the biology of *C. chlorideae* on different hosts.

The difference in the egg period and longevity of the parasitoid among the host insects were not significantly different (Table 1). However, the developmental period (larva to adult) of the parasitoid

Table 1. Comparative biology of *Campoletis chlorideae* on different hosts

Host insect	Life cycle (days)			Total developmental period(days)	Longevity of female (days)	Mean Fecundity	Sex ratio (♂:♀)
	Egg	Larva	Pupa				
<i>Corcyra cephalonica</i>	3.3	10.2	9.2	22.70 <sup>b</sup>	19.10	54.10 <sup>b</sup>	2.8:1
<i>Helicoverpa armigera</i>	3.0	7.6	6.8	16.90 <sup>a</sup>	17.70	68.90 <sup>a</sup>	1.7:1
<i>Spodoptera litura</i>	3.2	6.6	7.5	17.40 <sup>a</sup>	19.00	60.10 <sup>b</sup>	3.3:1
S.Em ±	0.13	0.25	0.31	0.45	1.04	2.84	
C.D. 5%	N.S	0.74	0.91	1.34	N.S	8.44	

on *C. cephalonica* (22.70 days) was significantly different over that of the parasitoid reared on *H. armigera* (16.90 days) and *S. litura* (17.40 days). This may be due to the fact that *C. cephalonica* larvae develop slowly comparing other two hosts. Further, fecundity of the parasitoid reared on *H. armigera* was found to be higher (68.90) and significantly different as compared to *S. litura* (60.10) and *C. cephalonica* (54.10). This could be due to higher preference of the parasitoid to its natural host *H. armigera*. Basarkar and Nikam (1982) reported that the progeny production of *C. chlorideae* ranged from 42 to 59. The sex ratio of the parasitoid reared in all the three hosts were biased towards male. Field collection (Gangrade, 1964) and laboratory colonization of *Campoletis perdistinctus* (Lingren *et al.*, 1970 and Clifford *et al.*, 1971) and *C. chlorideae* (Krishnamoorthy, 1987) have also shown that larger percentage of males than females usually occurs. Utilization of *C. cephalonica* for mass production of this ichneumonid parasitoid will be a boon for field release programmes.

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