Tri-trophic interaction of different diet fed *Corcyra cephalonica* (Stainton) on feeding efficiency of reduviid predator, *Sycanus collaris* (Fab.) under laboratory condition

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**ABSTRACT:** *Sycanus collaris* Fabricius (Hemiptera: Reduviidae) are voracious and polyphagous reduviid predators of economically important insect pests of agriculture and forest. Only limited work has been done in case of *S. collaris*, but life history of these predators on *Corcyra cephalonica* Stainton were documented. The present study was carried out at the Bio-control laboratory, Department of Entomology, College of Agriculture, IGKV, Raipur (C.G.), during February to May, 2018 with an aim to assess influence of various diets fed *C. cephalonica* larvae on feeding efficiency of reduviid predator, *S. collaris*, which are responsible for preference and non-preference of reduviid bugs for mass rearing in laboratory conditions. For this experiment, ten freshly hatched first instar *S. collaris* nymphs were placed in Petri-dish, replicated thrice and larvae of *C. cephalonica* reared on twelve different diets were provided throughout their life cycle and the feeding efficiency was recorded. Results indicated that feeding efficiency of *S. collaris* was found to be maximum (183.31) in T1 (Rice), whereas it was found to be minimum (91.33) in T9 (Maize + Groundnut) reared larvae of *C. cephalonica*.

**KEY WORDS:** *Corcyra cephalonica*, feeding efficiency, reduviid, *Sycanus collaris*
Research revealed that artificial rearing is very imperative for the mass production of reduviids which could be used in pest management. Only limited work has been done in case of \textit{S. collaris}, but life history of these predators on \textit{C. cephalonica} were documented. Nymphal development, longevity, size and their predatory efficiency may be greatly influenced by the quality of the available food. Influence of food on the development of many insect pests and predators are available in plenty but no information is available for reduviids reared on \textit{Corcyra} larvae fed on different diets. The present study thus facilitates the assessment of various diets, which are responsible for preference and non-preference of reduviid bugs for mass rearing in laboratory conditions.

**MATERIALS AND METHODS**

\textit{Corcyra cephalonica} larvae are used as an alternative laboratory host for mass multiplication of the reduviid, \textit{Sycanus collaris}. Influence of \textit{Corcyra cephalonica} reared on different diets on feeding efficiency of reduvid predator, \textit{S. collaris} was studied under laboratory conditions in the Bio-control laboratory, Department of Entomology, College of Agriculture, IGKV, Raipur (C.G.), during February to May 2018.

The experimental treatments comprised of 12 diets (Table 1) and were conducted in Completely Randomized Design (CRD) replicated thrice.

For this experiment, ten freshly hatched first instar nymphs of \textit{S. collaris} were placed in petri-dish, replicated thrice and 3\textsuperscript{rd} instar larvae of \textit{C. cephalonica} reared on different diets were provided and feeding efficiency was recorded on daily basis throughout their life cycle.

**RESULTS AND DISCUSSION**

From the data depicted in Table 2, it is clear that the mean maximum number of \textit{Corcyra cephalonica} larvae consumed by \textit{Sycanus collaris} was from those reared on \textit{T\textsubscript{i}} (183.31) which is significantly at par with \textit{T\textsubscript{8}} (149.33), \textit{T\textsubscript{10}} (143.67), \textit{T\textsubscript{9}} (141.67) and \textit{T\textsubscript{11}} (140.33), whereas minimum was recorded in case of \textit{T\textsubscript{9}} (91.33).

![Graphical representation of number of larvae of Corcyra cephalonica reared on 12 different diets consumed by Sycanus collaris.](Fig. 1)

**Table 2. Number of larvae of Corcyra cephalonica reared on 12 different diets consumed by Sycanus collaris**

| Treatments | Replications | Total | Average |
|------------|--------------|-------|---------|
| \textit{T\textsubscript{i}} | 550 | 183.33 |
| \textit{T\textsubscript{2}} | 421 | 140.33 |
| \textit{T\textsubscript{3}} | 345 | 115.00 |
| \textit{T\textsubscript{4}} | 385 | 128.33 |
| \textit{T\textsubscript{5}} | 425 | 141.67 |
| \textit{T\textsubscript{6}} | 397 | 132.33 |
| \textit{T\textsubscript{7}} | 404 | 134.67 |
| \textit{T\textsubscript{8}} | 448 | 149.33 |
| \textit{T\textsubscript{9}} | 274 | 91.33 |
| \textit{T\textsubscript{10}} | 431 | 143.67 |
| \textit{T\textsubscript{11}} | 405 | 135.00 |
| \textit{T\textsubscript{12}} | 340 | 113.33 |

SEM± 13.22  
CD (5%) 45.11
The sequence of preference in descending order can be classified as T1 > T8 > T10 > T5 > T2 > T11 > T7 > T6 > T4 > T3 > T12 > T9. The data depicted in Table 3, shows that there were significant differences between the treatments and the mean maximum weight of 3rd instar *C. cephalonica* larvae was found from those reared on Pearl millet + Groundnut (T11) 0.020 gms and minimum in case of Wheat (T2) 0.010 gms.

The sequence of weight of 3rd instar larvae in descending order can be classified as T11 > T5 > T6 > T10 > T12 > T3 > T9 > T4 > T7 > T1 > T8 > T2. Fig. 2 shows negative correlation (-0.305) between feeding efficiency of *S. collaris* and weight of 3rd instar *C. cephalonica* larvae, showing that feeding efficiency of *S. collaris* decreases with increase in larval weight.

Thus, from the present studies it can be concluded that among the various diets tested *C. cephalonica* larvae reared on rice was preferred most and that reared on Maize + Groundnut was least preferred by *S. collaris*. Hence, for the mass multiplication of *S. collaris*, the larva of *C. cephalonica* maintained on rice seems to be most suitable.

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