

STUDIES ON THE EFFECT OF HOST NUTRITION ON *BRACON BREVICORNIS* WESMAEL

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Bracon brevicornis (Braconidae: Hymenoptera) is an effective larval parasite of *Nephantis serinopa* the coconut caterpillar. It is usually multiplied in the laboratory for the applied biological control of the caterpillar using the larvae of *Corcyra cephalonica* as the alternate host. Katiyar (1962) observed that *Bracon gelechia* and *Trichogramma evanescens minutum* reared on larvae of *Corcyra cephalonica* bred on a medium containing crushed sorghum with 8 percent yeast gave the best results. The present studies were undertaken to find out how far the nutrition of the larvae of *Corcyra cephalonica* affects the biological and biometric characters of *B. brevicornis* when bred on them.

Material and Methods

The different media providing different nutrition on which *Corcyra* larvae were bred were as given in Table I. The wheat flour which formed the basic diet was in a coarsely ground form while the other components were used as fine powders. For breeding the larvae lots of 500 gm of the different media were taken in rectangular glass jars and 300 eggs of *C. cephalonica* added to each lot. The jars were kept closed with muslin cloth. Full grown larvae were used for parasitisation by *B. brevicornis* for which five larvae were exposed to a pair of the parasite there being ten such replications for each medium. The effect of the nutrition of the host caterpillar on the parasites was assessed in terms of the duration of development; sex-ratio, fecundity, longevity and size of the parasites reared on caterpillars feeding on the different media.

Results

Table I summarises the biological and biometric features of *B. brevicornis* reared on *Corcyra* larva feeding on different food media. Statistical analysis revealed that the duration of development of the parasite was not significantly affected by the nutrition of the host larvae. There was a preponderance of males when bred on host feeding on diets containing yeast, bengal gram or skimmed milk powder. There was a preponderance of females when host was fed on corn flour only. The larvae

reared on media containing thiamin and skimmed milk powder produced parasites with significantly higher fecundity than the larvae fed on the other media. The larvae reared on 011 medium containing fructose produced parasites with very low fecundity. The longevity was very high for those parasites reared on larvae bred on media containing fructose (17 days) black gram, glucose and yeast (16 days each) and corn flour (12 days); the longevity was very low when reared on caterpillars fed on wheat flour alone (5 days) or on wheat flour with yeast (7 days) bengal gram powder, black gram powder or skimmed milk powder (6 days each). As regards the size of the parasites (as judged from the body length) the variations in the effects of the different host nutrition were statistically significant. Thus the parasites reared on the larvae led on media containing glucose and fructose had the maximum size while on the other end of the scale parasites produced from larvae reared on media containing skimmed milk powder and wheat flour alone (basic diet) had the least size,

Table I

Biological and biometric characters of *Bracon brevicornis* bred on *Corcyra* caterpillars fed on different food media

Food media	Duration of development (days)	Sex ratio M:F	Number of eggs per female	Longevity (in days)	Length of adults (mm)
Wheat flour (Basic diet)	11.29	1:1.70	11.70	5	2.51
Do + Yeast 3%	10.94	1:0.37	17.71	7	2.86
Do + Bengalgram 25%	12.50	1:0.25	nil	6	2.87
Do + Black gram 25%	11.66	1:1.09	14.00	6	2.86
Do + Glucose 25%	12.00	1:0	nil	9	3.20
Do + Fructose 25%	11.96	1:1.08	9.33	17	2.98
Do + Black gram 25% + Glucose 25% + Yeast 3%	11.20	1:1.27	17.33	16	2.96
Do + Whole cream milk powder 25%	nil	nil	nil	nil	nil
Do + Skimmed milk powder 25%	11.84	1:0.23	19.75	6	2.54
Do + Thiamin at 25 mg/gm.	10.00	1:0.88	25.00	9	2.96
Corn flour	10.00	1:3.38	13.77	12	2.86

Summary

Studies were made on the influence of host nutrition on *Bracon brevicornis* when reared on larvae of *Corcyra cephalonica*. Variations in the food media of the host larvae did not affect the duration of development of the parasite significantly. A preponderance of males was seen in association with the media containing yeast, bengal gram or skimmed milk powder while a preponderance of females occurred with the medium of corn flour only. The fecundity of the parasite was significantly affected by host nutrition. The host larvae bred on media containing thiamin or milk powder or yeast produced the largest number of progenies. The longevity of parasites produced by caterpillars reared on media containing fructose, black gram glucose or yeast or on corn flour only was far higher than that of parasites reared on the other media. There was significant difference in size of the parasites due to host nutrition, larger sized parasites being produced by caterpillars bred on media containing glucose or fructose.

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Reference

Katiyar, R. N. 1962. Effect of nutrition on the fecundity, longevity and sex-ratio of *Bracon gelechiæ* Ash. and *Trichogramma evanescens minutum* Riley using *Corcyra cephalonica* Stainton as their host reared on various synthetic diets. *Agra. Univ. J. Res. (Sci.)* 11: 17-21

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