## A STUDY ON THE LIPID COMPONENT OF THE HAEMOLYMPH OF A SPIDER *POECILOTHERIA FASCIATA*

It is known from the works of Nowosielski and Patton[1] and others[2–4] that the concentration of lipid in the haemolymph in insects varies from 5 to 295 mg/100 ml. Myriapods are found to have 100 to 239 mg/100 ml[5,6]. In contrast to these, the crustaceans have very high values ranging from 500 to 590 mg/100 ml in *Astacus astacus* and 435 to 480 mg/100 ml in *Maja squinado*[7,8]. But virtually nothing is known of the haemolymph lipid in Arachnida. Hence the present study was undertaken on the lipid of the haemolymph of a spider *Poecilotheria fasciata.*

These giant spiders are available throughout the year in the Nilgiri Hill jungles. Specimens of both the sexes of different sizes are used for the analyses. Presumably the smaller ones are younger than the larger specimens. The method of collection of these arachnids and the procedure for obtaining the haemolymph have been given elsewhere[9]. The total and differential concentration of lipid are estimated according to the procedure outlined by Sundara Rajulu[5].

TABLE I

*Total concentration of lipid in the haemolymph of* Poecilotheria fasciata *in mg/100 ml*

| Sl. No. | Length of the animal (mm) | Quantity of lipid | |
|---|---|---|---|
| | | Male | Female |
| 1. | 17 | 426±12 | 310±9 |
| 2. | 19 | 435±11 | 329±10 |
| 3. | 22 | 449±9 | 347±13 |
| 4. | 26 | 453±5 | 362±9 |
| 5. | 29 | 472±8 | 378±8 |
| 6. | 34 | 491±6 | 396±6 |
| 7. | 36 | 504±10 | 399±7 |
| 8. | 38 | 517±8 | 418±9 |
| 9. | 43 | 520±11 | 425±11 |
| 10. | 52 | 536±7 | 437±14 |
| Average | | 480 | 380 |
| Species average | | 430 | |

From the results presented in Table I it may be evident that the males have higher quantities of lipid in the haemolymph than the females and in both the sexes the younger specimens have lesser quantity than the older ones. The average value for the species is 430 mg/100 ml. The results of the analyses of the different types of lipids in the haemolymph are given in Table II. The sample of haemolymph analysed was a mixture of haemolymph from spiders of different sizes of both the sexes so that the values obtained are valid for the species. The haemolymph contains free fatty acids, phospholipids and triglycerides. The free fatty acids account the maximum proportion (43·5%) while the phospholipids and tiglycerides amount 38·2% and 18·3%, respectively.

TABLE II

*Differential concentration of the different types of lipid in the haemolymph of* Poecilotheria fasciata *in mg/100 ml*

| Sl. No. | Lipid fraction | Quantity | Percentage out of the total quantity |
|---|---|---|---|
| 1. | Free fatty acids | 187·1 | 43·5 |
| 2. | Phospholipids | 164·3 | 38·2 |
| 3. | Monoglycerides | .. | .. |
| 4. | Diglycerides | .. | .. |
| 5. | Triglycerides | 78·7 | 18·3 |

A comparison of the lipid content of the haemolymph of the spider with that of the otrer groups of Arthropoda may reveal that the condition in the spider is similar to what is found in Crustacea[7,8]. The resemblance is very striking in the absence of mono– and diglycerides in the spider and in the crustaceans[10,11].

Department of Zoology, University PG Centre, Coimbatore 641 004,
*November* 15, 1977.

M. ARUCHAMI.
G. SUNDARA RAJULU.

1. Nowosielski, J. W. and Patton, R. L., *J. Insect. Physiol.*, 1965, 11, 263.
2. Sridhara, S. and Bhat, J. V., *Ibid.*, 1965, **11**, 449.
3. Mayer, R. J. and Candy, D. J, *Ibid.*, 1969, **15**, 611.
4. Wang, C. M. and Patton. R. L., *Ibid.*, 1969, **15**, 851.
5. Sundara Rajulu, G., *Symp. Zool. Soc. Lond.*, 1974, **32**, 347.
6. Gowri, N. and Sundara Rajulo, G., *J. Anim. Morph. Physiol.*, 1976, **23**. 60.
7. Domboviceanu, A., *Arch. r. pathol, Microbiol.*, 1934, **10**, 377.
8. Drilhon–Courtis, A., *Ann. Physiol. Physicochim. Biol.*, 1934, **10**, 377.
9. Sundara Rajulu, G. and Santhanakrishnan, G., *Zool. Anz.*, 1972, **189**, 222.
10. Bligh, E. G. and Scoot. M. A., *J. Fish. Res. Bd. Canada*, 1966, **23**. 1629.
11. Connor, J. D. and Gilbert, L. I., *Am. Zool*, 1968, **8**, 529.