RESEARCH NOTES

ESTIMATION OF NUCLEIC ACIDS IN THE INDIAN HONEY BEE *APIS INDICA* F.

The key role played by nucleic acids in heredity and control of body metabolism is well known. No information exists on the amount of nucleic acids present in Indian insects. The present studies were hence undertaken to estimate the amount of nucleic acids contained in the Indian honey bee *Apis indica*.

Forager bees obtained from the colonies maintained in the Division of Entomology, Indian Agricultural Research Institute, New Delhi were used for the studies. Nucleic acids were isolated by the method of Schmidt and Thannhauser (1945), Bees were immobilised by keeping them at 0 to 5° C for about 10 minutes. Individual bees after removing the wings, were weighed and immediately homogenized in 2 ml of ice cold 10% trichloroacetic acid in an all-glass Potter-Elvehjem type homogenizer. The homogenate was centrifuged and the supernatant containing soluble low molecular weight substances discarded. The residue was re-extracted twice with 2 ml each of ice cold 10% TCA. The pellet was freed from lipids by extracting thrice with a mixture of rectified spirit and ether (3 : 1) followed by centrifugation. The residue containing nucleic acids and proteins was digested with 3 ml of 0.3 N KOH for 2 hours at room temperature and then acidified with 1.5 ml of 1.2 N TGA and again centrifuged. RNA in the supernatant was estimated by the orcinol reaction (Schneider 1957). DNA was separated from proteins in the residue by treating with 6 ml of 5% TGA and heating the mixture for 15 minutes at 95° G on a waterbath, followed by centrifugation. DNA estimations in the supernatant were performed by the diphenylamine reaction (Schneider 1957).

Table !

Amounts of RNA and DNA present in the whole body homogenates of Indian honey bee

S. No. (Bee)	Weight of bee (mg)	DNA		RNA	
		Total (g)	(mglg body wt)	Total (g)	(mglg body wt.)
1	60	62.5	1.041	27.3	0.455
2	67	50.0	0.746	23.4	0.349
3	60	62.5	1.041	19.5	0.325
4	62	18.6	0.300	31.2	0.503
5	55	25.0	0.454	27.3	0.496
6	57	22.8	0.400	24.0	0.421
7	43	12.5	0.290	27.3	0.635
8	53	12.5	0.236	30.4	0.574
9	45	25.0	0.555	27.3	0.606
10	50	25.0	0.500	32.0	0.604
Average			0.556		0.496

From the data presented in Table 1, it is clear that the average values of RNA and DNA contents in the honeybees did not differ significantly. The DNA contents were found to range between 0.236 and 1.041 with a mean value of 0.556 rng/g body weight. The RNA contents in the whole body homogenates varied from 0.325 to 0.635 mg/g body weight. The average RNA content was 0.496 mg/g body weight.

References

Schmidt, G. and Thannhauser, S. J. 1945. J. *Biol. Chem. 161* : 83

Schneider, W. C. 1957. Methods in Enzymology 3 : 680

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