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A PRELIMINARY NOTE ON A PROBABLE CASE OF DIELDRIN RESISTANCE
IN ANOPHELES CULICIFACIES IN THANA DISTRICT, BOMBAY STATE

by

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Pending detailed investigations, we wish to record a case of what appears to be resistance to dieldrin in Anopheles culicifacies Giles, in five villages in Murbad Taluka, Thana District, Bombay State, India.

Tests were carried out in these villages by the WHO method from 13 to 30 October 1958. Adult females which had taken full bloodmeals the previous night were collected from the mixed dwellings early in the mornings and used for tests before 12 noon. Papers supplied by WHO and impregnated in January-February 1958 were used. The tests were carried out with three replications in Potgaon village and at one replication in four other villages for confirmation. The results are summarized in the Table. It will be noted that the scarcity of mosquitos obliged us to use smaller batches than laid down in the WHO instructions.

The need for these tests arose when reports of an "epidemic" of malaria were received from this area, in which indoor residual spraying had been continuously in operation from 1948, giving very good vector-control. From 1948 to 1952 DDT in the form of an aqueous emulsion was employed in three rounds a year at a dosage of 56 mg per sq. ft. From 1953 to 1956 DDT in the form of a 75 per cent. water wetttable powder was used in two rounds each year at a dosage of 100-112 mg per sq. ft. In 1957/58 dieldrin 50 per cent. water wetttable powder was used in two rounds at 28 mg per sq. ft., the most recent application being that of May 1958.

The tests show that the LC₅₀ of dieldrin for A. culicifacies in Thana District is well over 1.6%, and cannot be determined with precision as the population is evidently heterogeneous. The LC₅₀'s dieldrin so far reported from different parts of India for A. culicifacies have been around 0.05 per cent. The LC₅₀'s of dieldrin for most malaria vectors in the world which are susceptible have been less than 0.05 per cent., as seen from the second global review made by WHO (1958).

Until the investigations are extended to more places we do not wish to state categorically that the high LC₅₀ of dieldrin now noticed is actually a case of development of resistance, because no determination had been made in this particular area before. But the figure is much higher than that recorded for this species anywhere else and is confirmed by the observations in all five villages.

The LC₅₀ of DDT was determined at Potgaon village at the same time, and proved to be 0.84%. This compares with a figure of 0.41% at Revti, about six miles away, in 1956 (Ramachandra Rao & Bhatia, 1957) and may indicate that the species has acquired a slight degree of tolerance to DDT.

We have hastened to record these preliminary results only in order to alert the other workers in the country to the need for vigilance wherever dieldrin is being used. This perhaps is the first instance of A. culicifacies, the major vector of India, showing resistance to an insecticide.

REFERENCES

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SUSCEPTIBILITY TESTS ON DIELDRIN WITH A. CULICIFACIES FEMALES (BY WHO METHOD)

Place: Thana District, Bombay State
 Dates: 13-30 October 1958

Concentration per cent.	Potgaon	Nandani	Mchap	Asela	Waghivli	Total	Corrected mortality per cent.
Control	1/41	0/12	0/14	0/10	0/11	1/88	
0.05	1/35	0/15	0/15			3/65	3.5
0.1	5/37	1/14	3/15			9/66	12.6
0.2	10/41	4/15	3/16		2/11	19/82	22.3
0.4	13/42	6/15	3/15		4/11	26/82	30.9
0.8	13/51	5/15	3/16	4/10	3/11	28/103	26.4
1.6	17/40	7/17	7/16	3/10	4/11	38/94	39.7

The number dead and number exposed are shown as 2/15, 19/82 and so on.
 Three replications at Potgaon, one only at the other villages.