EFFECT OF STARVATION AND DESICCATION ON THE SUSCEPTIBILITY OF ONCOMELANIA SNAILS TO MOLLUSCICIDES*

Although the efficacy of various kinds of molluscicides against *O. nosophora* in the laboratory has been determined by various workers, no data are available to indicate the effect of starvation and desiccation on the susceptibility of snails to molluscicides. To determine it would be of value for the bioassay of molluscicides. The study herein reported was made in an attempt to know the effect of starvation and desiccation on the susceptibility of *O. nosophora* to NaPCP (Sodium pentachlorophenate).

O. nosophora collected from the suburbs of Kofu City in Yamanashi Prefecture was divided into 4 groups in the laboratory. At the commencement of experiments, the susceptibility of the snails of the control group to NaPCP was examined, rendering possible the comparison with those of the snails subjected to the three different conditions indicated below.

Desiccation: The snails were put into a large Petri dish without water and were kept in the laboratory having a temperature of 12 to 18 C, and relative humidity of 40 % to 80 %.

Starvation: The snails were put into a large Petri dish with a small amounts of distilled water and were kept in the laboratory having a temperature of 12 to 18 C.

Feeding: The snails were put on a sheet of moistened filter paper which was laid at the bottom of a polyethylen box. The box was placed in the laboratory at the temperature of 10 to 18 C. The snails were fed with a commercially available baby food** which was suggested by Moose et al. (1962).

The susceptibility of the snails, which had been subjected to such different conditions, to NaPCP were examined by Komiya's immersion method (modified immersion method, Komiya et al., 1962) at intervals of 3, 6 and 9 weeks and the LC₅₀ (50 % lethal concentration) was calculated by Litchfield & Wilcoxon's method. As seen in Table 1, the LC₅₀ of the snails subjected to the three different conditions were compared with that

Table 1. The LC₅₀ of snails kept under the three different conditions

Storing period	Desiccation group	Starvation group	Feeding group
3 weeks*	0.35(0.29-0.42) ppm	0.31(0.25-0.38) ppm	0.27(0.22-0.34) ppm
6 weeks*	0.35(0.30-0.41) ppm	—	0.29(0.23-0.36) ppm
9 weeks**	—	—	0.30(0.23-0.38) ppm

* The LC₅₀ of control snails for 3 and 6 weeks was indicated as 0.35(0.29-0.42) ppm.

** The snails used in this test are different in the date of collection from those in other test and the LC₅₀ of control snails was shown as 0.43(0.34-0.53) ppm.

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** Baby food: "Baby Meal A" by Wakodo Co., Ltd., Tokyo.

of the control shown in the footnote of Table 1. No significant difference in the susceptibility to NaPCP was found to exist among the snail groups tested and also between those and control. The test for the susceptibility of the snails starved for 6 and 9 weeks and those desiccated for 9 weeks could not be carried out because of a high mortality of the snails as seen in Table 2.

The results obtained in the present experiment support the view that the simplest way for storing the freshly collected snails in the laboratory for the bioassay of molluscicides is to keep them under dry conditions.

Table 2. Mortality of snails kept under the different conditions for 6 and 9 weeks

Storing period	Desiccation group			Starvation group			Feeding group		
	No. examined	Dead	Mort. (%)	No. examined	Dead	Mort. (%)	No. examined	Dead	Mort. (%)
6 weeks	119	39	19.6	368	363	98.6	239	21	8.7
9 weeks	459	410	89.3	—			448	292	65.2

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