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A test for mutagenicity of Shell " No-Pert Strip Insecticide" in Neurospora crassa.

"No-Pert Strip Insecticide" manufactured by Shell Chemical Company is widely used in homer and public facilities. The following is part of the description and directions given on this insecticide purchased in July, 1967: "Active ingredients by weight - - 2,2-dichlorovinyl dimethylphosphate, 18.6%; related compounds, 1.4%; inert ingredients, 80.0%. No-Pert Resin Vaporizer Strip is a specially prepared insecticidal formulation for use in the control of flier, gnats, mosquitoes, ond other small flying insects for up to three months. Use one strip for each 1000 (10'x10'x10') cubic feet of enclosed area. Note: No-Pest strips ore not designed to kill insects instantaneously. They work by continuous action affecting the insect over a short period of time. Caution', Keep out of reach of children. Do not get in mouth: harmful if swallowed. After prolonged storage, a small amount of liquid may form on the strips. Do not get liquid in eyes. Wash hands thoroughly with soap and water after handling strip. Do not contaminate feed, water, and food stuffs."

An interesting aspect of this product is thot the occupants of a room containing No-Pert Strip ore exposed to the insecticide continuously. We decided that the possible mutagenic effects of No-Pert Strip should be investigated.

Forward mutation at the adenine-3 (ad-3) region of a standard wild-type strain, 74-OR23-1A (Core, Brockman ond de Serrer 1965 Neurospora Ned. 8: 25), and of a heterokaryon, 74-OR31-16A + 74-OR60-29A (de Serrer and Webber 1963 Neurospora Newsl. 3:3), of Neurospora crassa was studied. The heterokaryon was selected because multilocus deletions arising from chromosome breakage and intragenic mutations con be detected (de Serres 1968 Genetics 58:69) Slants of Fries' basal medium (Horowitz and Beadle 1943 J. Biol. Chem. 150:325) suppl emented with 1% sucrose and 1.5% agar were inoculated and grown under three different conditions for 6 days. One set of slants (control) was placed in a IO-gallon aquarium that hod been covered with plate glass and sealed with petroleum jelly 24 h rbe fore addition of the slants. A second set of slants (experimental) was placed under identical conditions except a No-Pert Strip was placed in the aquarium 24 hr before addition of the slants. Both aquaria were re-sealed after addition of the slants and remained sealed for 6 days. A third ret of slants (room control) was placed in the room (23°C) containing the aquaria. Vegetative growth and conidiation occurred at a lower rote in the experimental cultures than in the control cultures, and the amount of conidiotion at 6 days was much less in the experimental cultures than in the control cultures. The viability of conidia from cultures grown under the three conditions was the some.

Conidio were harvested from the vegetative cultures after 6 days of growth and arrayed for od-3 mutants by a direct method (de Serres and Kølmark 1958 Nature 182: 1249) or previously described (Brockmon and de Serres 1963 Genetics 48:597; Webber and de Serrer 1965 Proc. Natl. Acad. Sci. U .S.53:430). The results ore given in the Table. The spontaneous mutation frequency in a previous experiment was 0.4 ad-3 mutants per 1×10^6 colonies (Brockman and de Serrer 1963).

Results Of forward-mutation experiment.

Strain	Condition	Colonies assayed	ad-3 mutants
74-0R23-1A	Room control	1.1×10^6	0
	Control	0.9×10^6	0
	Experimental	1.7×10^6	0
74-0R31-16A + 74-0R60-29A	Room control	3.3×10^6	0
	Control	2.0×10^6	0
	Experimental	2.7×10^6	0

We conclude that Shell "No-Pert St rip Insecticide" doer not induce forward mutation at the ad-3 region or lethality in N. crassa under the conditions of our experiments. It inhibits the rate of vegetative growth ond conidiation and decreases the final amount of conidiotion. (Research supported by the U.S. Atomic Energy Commission under Contract No. AT(11-1)-1314 with Illinois State University; Report number COO-1314-I 1). - - - Depa.t ment of Biological Sciences, Illinois State University, Normal, Illinois 61761.