Wouldn't Hurt a Fly: The Efficacy of Plant Latex as an Insect Repellent

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Cabbage is a vegetable commonly eaten by insects, but lettuce is not. The difference between these two vegetables is whether or not they contain latex. Figs, mulberries, and sun spurge—like lettuce—also contain latex and are untouched by insects. Using a sample of latex gathered from these plants, we investigated the efficacy of latex as a natural insect repellent. In this study, samples of spurge, fig, mulberry and lettuce latex were collected by scratching the leaves and stems of the plants. Then, the samples were dissolved in ethanol and diluted about 10 times and applied to a variety of young plants. The efficacy of the latex as an insect repellent was measured by the number of days it took for aphids or cabbageworms to reappear on the young plants after the solution was applied. These latexes were found to have repellent effects on both aphids and cabbageworms. The latex solution from these latexes were analyzed using gas chromatography-mass spectrometry and were discovered to contain B-Caryophyllene, a terpene. B-Caryophyllene was able to repel aphids at a concentration of 10 ppm and cabbage butterfly larvae at 100 ppm. Woody terpenes are harmless to the human body and do not accumulate in the body like other chemicals. By killing insects with pesticides, insects with resistance to pesticides appear. Terpenes just repel insects, do not kill insects, resistant insects do not emerge. Terpenes are renewable resources produced by plants with the help of the sun.

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