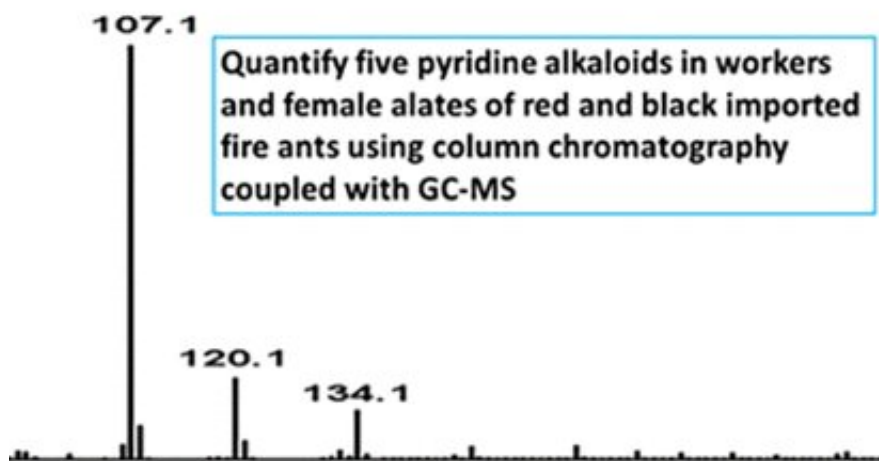
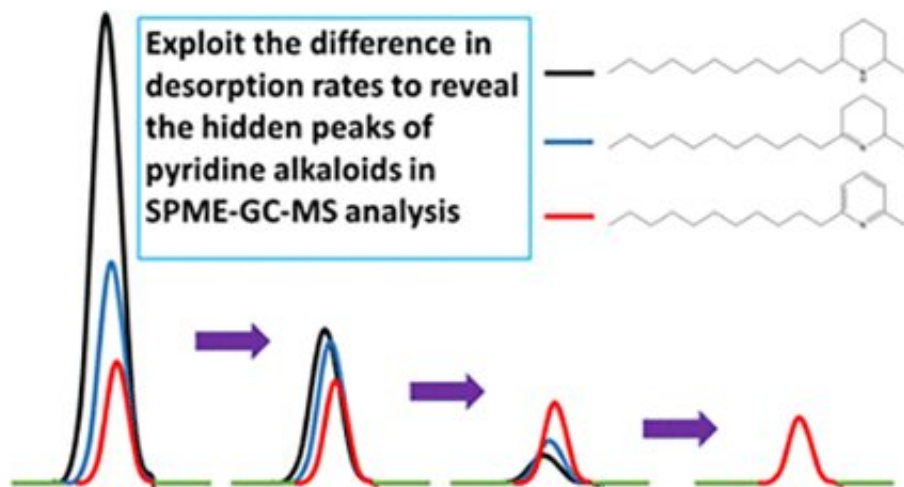


Newly identified compounds could help give fire ants their sting

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Credit: American Chemical Society

Native to South America, imported fire ants have now spread to parts of North America and elsewhere around the world. These invasive pests have painful stings that, in some cases, can cause serious medical problems, such as hypersensitivity reactions, infections and even kidney failure. Now, researchers reporting in ACS' *Journal of Agricultural and Food Chemistry* have identified pyridine alkaloids that, along with other venom components, could contribute to these conditions.

Imported [fire ants](#), including red (*Solenopsis invicta* Buren), black (*Solenopsis richteri* Forel) and hybrid (*S. invicta* × *S. richteri*) species, are threats to public health, agriculture and ecosystems. Previous research has investigated the chemistry of fire ant venom, identifying various alkaloid compounds that contribute to the pain and other effects of bites. Jian Chen, Jin-Hao Zhao and colleagues wanted to dig deeper into fire ant venom to uncover compounds that might have been overlooked.

The researchers collected venom from red, black and hybrid imported fire [ants](#) by placing ants under a microscope and touching their abdomens repeatedly with a small piece of filter paper. In response, the ants protruded their stingers and released drops of venom, which the filter paper absorbed. The team then analyzed venom components on the paper. By coupling solid-phase microextraction with gas chromatography-mass spectrometry, they identified 10 pyridine alkaloids whose signals were previously hidden by other alkaloids. The various ant species had slightly different pyridine alkaloid profiles, as did worker and winged female ants within each species. These compounds could open new avenues of research on the toxicological properties of fire ant venom, the researchers say.

More information: Jian Chen et al. Pyridine Alkaloids in the Venom of Imported Fire Ants, *Journal of Agricultural and Food Chemistry* (2019). [DOI: 10.1021/acs.jafc.9b03631](https://doi.org/10.1021/acs.jafc.9b03631)

Provided by American Chemical Society

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