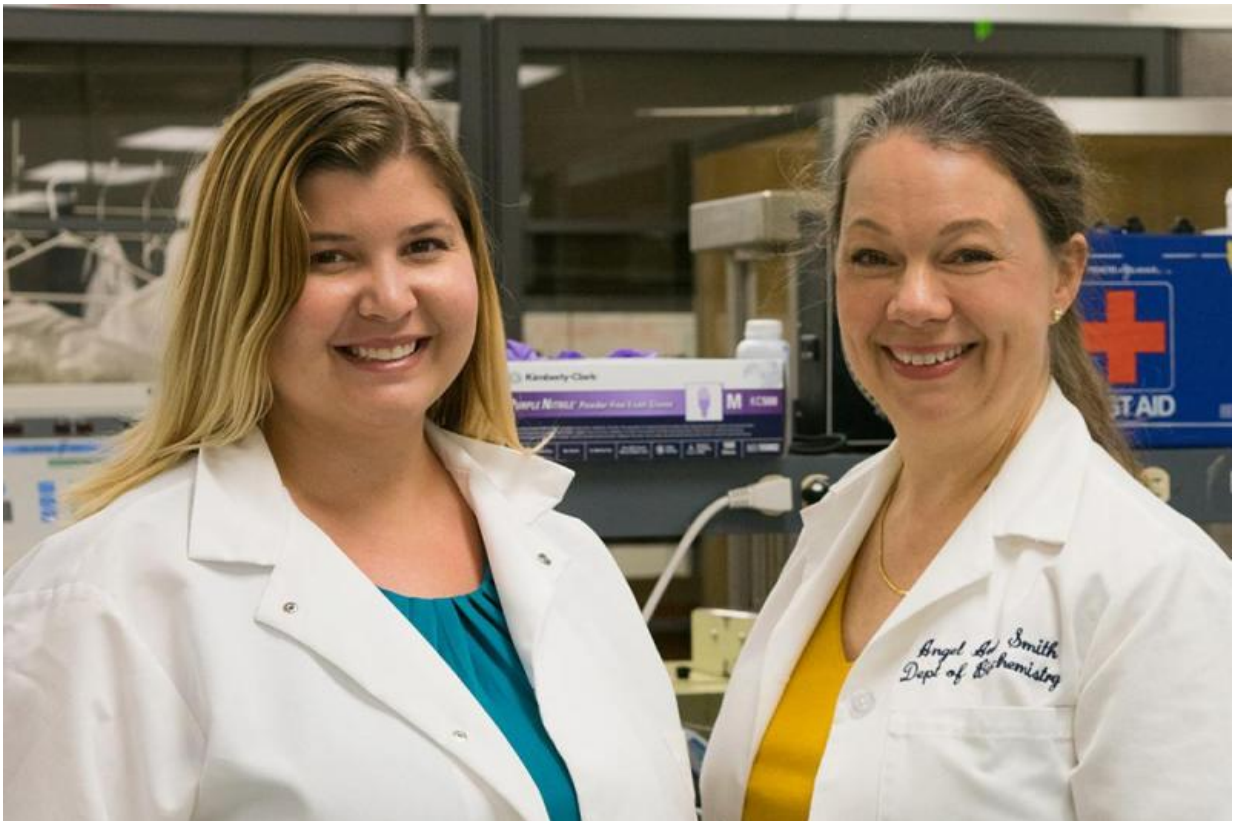


# Heat trumps cold in the treatment of jellyfish stings

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Christie Wilcox and Angel Yanagihara

A recent study by researchers at UH Mānoa, published this month in the journal *Toxins*, may finally put to rest the ongoing debate about whether to use cold or heat to treat jellyfish stings. Their systematic and critical

review provides overwhelming evidence that clinical outcomes from all kinds of jellyfish stings are improved following treatment with hot packs or hot-water immersion.

Jellyfish stings are a growing public health concern worldwide and are responsible for more deaths than shark attacks each year. Even "mild" stings can hurt for hours to days, and leave lasting scars. Despite the danger posed by these gelatinous invertebrates, scientists and medical professionals still do not agree on the best way to treat and manage jellyfish stings. At the center of the contentious debate is whether it is better to treat the sting site with heat or cold.

"People think ice will help because jelly stings burn and ice is cold," said Dr. Christie Wilcox, a postdoctoral fellow at the John A. Burns School of Medicine (JABSOM) and lead author of the paper. "And if you Google it, many sites – even those considered reputable – will tell you to put ice on a sting to dull the pain. But research to date has shown that all marine venoms are highly heat sensitive, thus hot water or hot packs should be more effective than cold packs or ice."

"Authoritative web articles are constantly bombarding the public with unvalidated and frankly bad advice for how to treat jelly stings," said Dr. Angel Yanagihara, assistant research professor at the UHM Pacific Biosciences Research Center (PBRC) and JABSOM and senior author of the paper. For the past 18 years, she has served as director of the Pacific Cnidaria Research Laboratory, and has studied the pathophysiology of jellyfish stings.

"In Hawai'i, and around the world, we have seen that first responders and public health decision-makers rely on non-evidence-based claims found on websites. It's not too strong to point out that in some cases, ignorance can cost lives," Yanagihara continued. "We conducted this study to rigorously assemble all the published data in hopes that policymakers

will revisit this issue and carefully consider the available evidence. We are also engaged in new experimental work with models looking at vinegar effects, as well as well-designed randomized clinical trials. The goal of my laboratory's efforts is to contribute to evidence-based best clinical practices for jellyfish stings. "

Wilcox and Yanagihara conducted a systematic review to compare the use of cold or heat in jellyfish sting treatment using a common ranking system for clinical evidence. The pair combed through more than 2,000 related articles from searches of major scientific journal article databases to find every study to date that examined the effects of using temperature-based treatments for jellyfish stings. The overwhelming preponderance of evidence supported the use of hot-water immersion (about 45 degrees Celsius). This is consistent with findings in more than a dozen articles, demonstrating that venom components are inactivated at temperatures between 40 and 50 degrees Celsius.

"I was shocked that the science was so clear, given that there is so much debate over the use of hot water," said Wilcox. Hot-water immersion is already the standard of care for other severe marine envenomations including potentially life-threatening stonefish stings, so these results help streamline the first-aid response. "It's simple, really: If you're stung, use [hot water](#) or hot packs rather than ice or cold packs."

**More information:** Christie Wilcox et al. Heated Debates: Hot-Water Immersion or Ice Packs as First Aid for Cnidarian Envenomations?, *Toxins* (2016). [DOI: 10.3390/toxins8040097](https://doi.org/10.3390/toxins8040097)

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