

The B.I.T.E. That Never Happened

Somewhere in the woods of America, a tick is looking for lunch. It can't see well, and it can't hear at all, but it doesn't need to: it just waits on a blade of grass sensing a faint trail of carbon dioxide drifting off a passing host. If the tick's lunch gets too close, it climbs aboard, bringing its luggage of Lyme disease, babesiosis, and a collection of other complex chronic diseases and one dreadful allergy to red meat. The rest is a sad reality for so many people: fever, fatigue, joint pain, and for some, years of lingering illness. Every year, ticks send many Americans to the doctor. In fact, one in every 680 people in America will be treated for Lyme disease from a tick bite this year, with an overwhelming majority of cases going unreported (meaning the actual risk is much higher). This disease has a remarkable impact on outdoor activities: playing in the backyard with your children, hiking with friends, gardening, hunting, and working outside are all at risk.

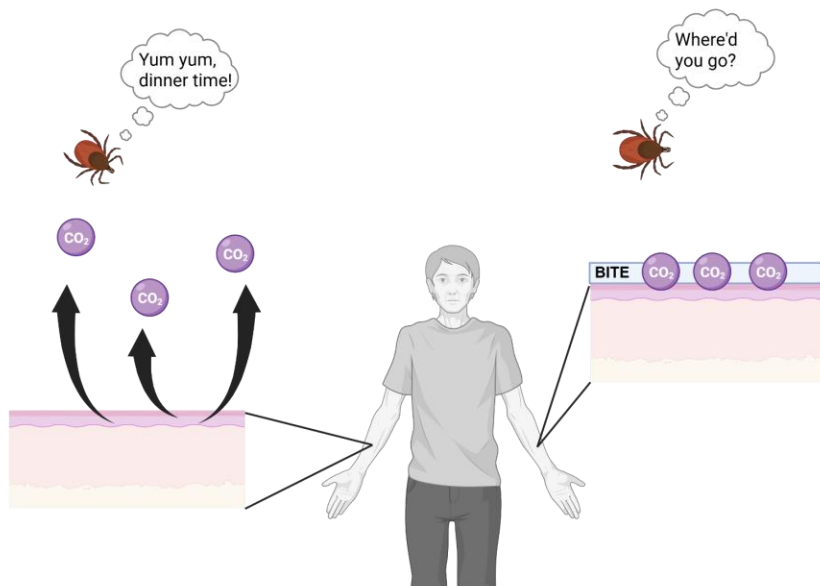
For decades, people protecting themselves from ticks have had to pick between two imperfect choices. Essential oil repellents are gentle and safe, creating an illusion of protection, but they don't hold up well against a determined and hungry tick. DEET, the active ingredient in store-brand sprays, works, but it comes with real downsides: skin and eye irritation, neurological risks, seizures, and potential hormone disruption in children. Not to mention runoff that can harm waterways, wildlife, and domestic pets when it washes off after a hike or day outside. When was the last time you read the label on your tick repellent? It may prevent tick bites, but with another level of assumed risk. In many cases, people would rather risk the potential tick bite than expose themselves to something that will harm them!

Our research team, Drs. Henning, Tracey, and Nigam set out with that notebook idea to find a better option, something that works as well as DEET without the health risk tradeoffs. Something that is safe and effective, not just the perception thereof to help protect people from tick bites. They didn't want you to have to choose between risking a tick bite or using a repellent that could cause harm.

Ticks don't see or smell the way we do; they find us largely by sensing carbon dioxide we release through our skin. This is where that notebook idea came in. Our team aimed to design a repellent that could simply soak up the carbon dioxide before the tick ever noticed it instead of masking the scent with toxic chemicals. The result was B.I.T.E: Binding to Increase Tick Evasion. This naturally-derived blend is built around hemoglobin, a protein found in all mammals that is excellent at binding carbon dioxide, combined with aloe vera gel and water. The hemoglobin acts like a sponge for the carbon dioxide signal ticks rely on, so the tick simply can't find a host to feed on! B.I.T.E has no harsh chemicals, no known environmental risk, and is built with ingredients your body and the outdoors can live with. Truly, an ounce of clever prevention can act as a pound of cure.

An idea is only as good as the evidence behind it, so we ran B.I.T.E. through two rounds of testing, first in a controlled lab setting and then with real human volunteers. In round one, we built a small "tick arena" and released ticks near a carbon dioxide source designed to mimic skin. The result was that ticks exposed to B.I.T.E took more than four and a half times longer to approach the source! This gave us hope to keep going.

A promising result in a laboratory arena is one thing, a promising result on actual skin is another. In round two, 90 human volunteers took part in head-to-head comparison, no treatment, the aloe base alone, a 15% DEET spray (the standard found in most drugstore repellents), and B.I.T.E. Ticks were placed near each volunteer's arm and their behavior was tracked closely.



Approach	Safety
Nothing	Very low (expect tick bites!)
Essential oils	Low (feel safe, not proven effective)
DEET	Very low (environmental and health concerns)
BITE Solution	Very high (feel safe, be safe)

The findings held up statistically: B.I.T.E. performed just as well as DEET at keeping ticks away and stopping them from getting a “free lunch”. The two were not meaningfully different from one another. In a notable number cases (47% of the volunteers), B.I.T.E. actually outperformed DEET! Ticks exposed to B.I.T.E. also moved less and explored less, as a sign they were more “confused” and less able to locate a host. As if the formula left them uncertain about where they even were let alone, where their next meal might be. We had found a new hope: a way to prevent tick bites without relying on harsh chemicals with proven efficacy and known safety.

None of this makes ticks harmless, and none of it makes Lyme disease any less serious a threat to the people who live, work, and play outdoors across America. What it does do is something quietly important: it proves that protection and environmental responsibility don’t have to be opposites. We can find hope in the most unexpected of areas: simple solutions for broad protection without forcing people to choose between risks to enjoy the outdoors.

The bottom line: in both lab and human trials, an aloe protein formula kept pace with a leading chemical repellent, with none of the health-related risks and downsides. It’s been built, and in trial after trial, it’s held its own against the best the market currently offers, without asking anyone to choose between protecting themselves and protecting the woods they are walking through. A simple change in paradigm can have a massive impact on preventing Lyme disease going forward. Enjoy the outdoors, feel safe, be safe.