

Smelly discovery challenges effectiveness of antimicrobial textiles

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Anti-odour clothing may not be living up to its promise, and an ALES researcher is saying it could all be a matter of how the product was tested.

In two separate experiments, Human Ecology researcher Rachel McQueen and her team found that some antimicrobial textiles were far more effective at performing their advertised tasks in the lab than in testing on humans. In one experiment, the fabrics were designed to help lower the risk of infection; in the second, the fabric was treated with a silver compound, which can be marketed preventing odour in clothing.

"We aren't necessarily seeing the same results in the lab about [antimicrobial activity](#) translating into antimicrobial activity when we're wearing them next to our bodies in real life," she said.

The first experiment analyzed the effectiveness of three different textiles coated in antimicrobials triclosan, a zinc pyrithione derivative and a silver chloride-titanium dioxide compound. After putting the fabric on people's arms under plastic film for 24 hours, the silver-chloride titanium dioxide compound hardly eliminated any bacteria. Overall, they found the in vivo—tested on humans—results were not comparable with in vitro—tested in the lab—results in how they prevented microorganisms from surviving in the textile.

The second test had similar results, and tested whether polyester textiles treated with bioactive concentrations of an antimicrobial silver chloride

compound reduced armpit odour and bacterial populations. Although lab testing showed antimicrobial activity, the treated fabrics did not lower odour or bacterial intensity in in vivo testing.

McQueen said that anything from sweat to the proteins in the human body can disrupt the [antimicrobial properties](#) of a fabric.

"In reality, when it goes to the point that it gets put on a textile... it may not have the same level of effectiveness as the ones they studied," she said.

McQueen said these findings highlight the importance of in vivo testing, which is less common than in vitro testing, in textile product development. But, because the textiles appear to be effective at reducing bacteria in the lab, she said they may be advertised as being anti-odorous, although they may not necessarily be so when actually worn.

So, for now, McQueen suggests thinking twice before trusting textile's advertised claims.

"It's just a real spectrum to how effective they may truly be. So I'd probably say, from a consumer's point of view, if you're actually buying something that says it's antimicrobial, it may not be," she said. "I think that's important to consider in relation to a lot of claims made about [textiles](#), that is, to be skeptical about the claims marketers make."

McQueen's research was recently published in the *International Journal of Clothing Science and Technology*.

Provided by University of Alberta

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