

# Researchers surprise mouth fungus with sugary 'Trojan horse' that hides medicine

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Scientists from the University at Buffalo School of Dental Medicine will borrow a famous strategy from Greek warfare - the Trojan horse - to fight a fungus that exists in the mouths and skin of nearly half of the world's population.

Oral thrush, a [yeast infection](#) recognizable as the white film that coats our tongues and throats and is formally known as Candida, is normally harmless and exists commonly in small amounts in the mouths of many people.

But an overgrowth can be dangerous in infants or the elderly, who may have an underdeveloped or weakened immune system. In severe cases, swallowing may become difficult or impossible.

The researchers will disguise histatin, a naturally occurring antifungal protein found in saliva, with spermidine, a component more readily accepted by the fungus, and a sugary mouthwash to combat these infections.

The study, "Candidacidal Mechanisms of Salivary Histatins," led by Mira Edgerton, a research professor in the UB Department of Oral Biology, is funded by a five-year, nearly \$2 million grant renewal from the National Institute of Dental and Craniofacial Research.

"Many people who wear dentures, use inhalers, or have been treated with antibiotics develop oral fungal infections, and this infection is very

resistant to treatment with most available drugs," says Edgerton, who has studied oral thrush for more than 20 years.

Previous studies by Edgerton found that histatin enters *Candida* using the same pathway as spermidine. She also found that the presence of glucosamine, a simple sugar, made fungi more receptive to outside compounds. To help histatin gain easier entry in the fungus, the researchers will bind the protein to spermidine to create a bio-peptide, or chemically engineered compound.

The study will examine the effectiveness of the bio-peptide on oral thrush in mice. The researchers will also test the usefulness of a mouthwash containing glucosamine in priming the yeast to accept the bio-peptide.

Edgerton hopes to find the optimal dosage and treatment procedure to fight the infection in humans.

Although there are existing medications for oral thrush, many patients don't follow their prescribed treatment because of the medication's bitter taste, says Edgerton.

By using sugars and proteins that are naturally found in saliva, Edgerton hopes to produce a treatment that is not only effective, but better tasting.

Oral thrush commonly occurs in people whose [immune system](#) has been weakened. Those at risk include people with diabetes or acquired immune deficiency syndrome (AIDS), and those undergoing chemotherapy or using antibiotics.

Denture and orthodontic retainer wearers are at increased risk as well, as *Candida* thrives in environments where there is a plastic surface for it to bind to. More than half of the denture-wearing population have

experienced [oral thrush](#), says Edgerton. According to the American College of Prosthodontists, more than 30 million people use complete or partial dentures.

Provided by University at Buffalo

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