

Tampons, sanitary napkins could diagnose yeast infections with color-changing threads

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Pink areas on a sanitary napkin indicate the presence of *C. albicans*, which could help women in low-resource settings affordably and discreetly self-diagnose yeast infections. Credit: Adapted from *ACS Omega* 2021

The yeast *Candida albicans* can cause itchy, painful urinary tract and vaginal yeast infections. For women in low-resource settings who lack access to healthcare facilities, these infections create substantial social and economic burdens. Now, researchers reporting in *ACS Omega* have developed color-changing threads that turn bright pink in the presence of *C. albicans*. When embedded in tampons or sanitary napkins, they could allow women to quickly and discreetly self-diagnose vulvovaginal yeast

infections, the researchers say.

According to the Mayo Clinic, about 75% of women will experience a yeast infection, or vulvovaginal candidiasis, at least once in their lifetime. Although women in high-resource areas can easily be diagnosed with a vaginal swab at their doctor's office and then treated with an [antifungal medication](#), many women throughout the world lack access to basic healthcare facilities. Moreover, in some resource-limited areas, societal taboos cause women to feel shame or embarrassment about the symptoms, which prevents them from seeking a doctor's care. Therefore, Naresh Kumar Mani and colleagues wanted to develop an inexpensive method that could be integrated into menstrual hygiene products, allowing [women](#) to quickly, easily and discreetly self-diagnose yeast infections.

The researchers began with ordinary multifilament cotton threads purchased at a local craft store. To increase the wicking properties of the threads, the team treated them with a heptane solution that removed waxes and binders added during manufacturing. Then, the threads were coated with a molecule called L-proline β -naphthylamide (PRO)—the substrate for an enzyme secreted by *C. albicans*—and embedded in the inner layers of sanitary napkins and pads. When the researchers added simulated vaginal fluid spiked with *C. albicans* and an indicator solution, the spots of the napkins or pads containing [yeast](#) changed to a bright pink color. The detection time was only 10 minutes, compared with 24–72 hours for conventional tests. In addition, the new test costs only 22 to 28 cents per napkin or tampon, and it could easily be adapted to simultaneously detect other pathogens, such as bacteria that also can cause urinary tract infections, the researchers say.

More information: Anusha Prabhu et al, Knitting Thread Devices: Detecting *Candida albicans* Using Napkins and Tampons, *ACS Omega* (2021). [DOI: 10.1021/acsomega.1c00806](https://doi.org/10.1021/acsomega.1c00806)

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