



Brooke M. Faught

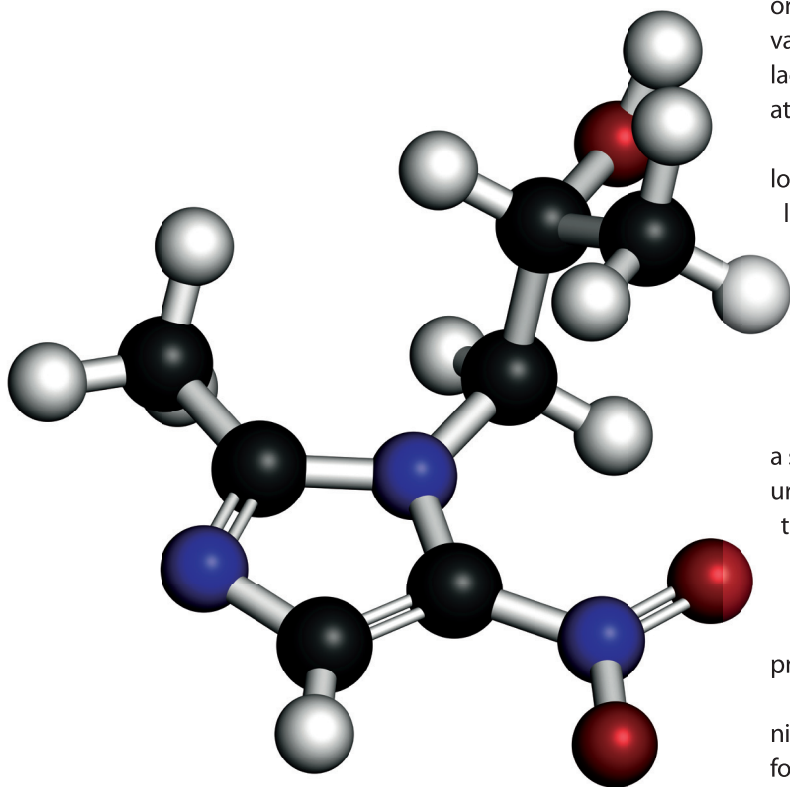


Kecia Harris

## The history of secnidazole

By Brooke M. Faught, DNP, WHNP-BC, NCMP, IF and Kecia Harris, PhD

**In September 2017, the FDA approved secnidazole for the treatment of bacterial vaginosis. Although new to the United States, secnidazole is a well-established anti-infective agent utilized worldwide for the treatment of various bacterial and parasitic infections. Published studies on secnidazole date back to the late 1960s, yet many U.S. healthcare providers remain unaware of the existence of this medication. This column details the history of secnidazole.**



Metronidazole, a nitroimidazole compound with antibacterial and antiprotozoal effects, was initially used nearly 60 years ago to treat *Trichomonas vaginalis* infection.<sup>1</sup> Metronidazole is now considered first-line treatment in the United States for anaerobic bacterial infections, including bacterial vaginosis (BV).<sup>2</sup> However, with the widespread use of metronidazole, data on the clinical and microbiologic resistance of various bacteria and parasites to this agent continue to emerge.<sup>3</sup>

Several other nitroimidazoles have been introduced since metronidazole, including tinidazole, ornidazole, and secnidazole, which have longer half-lives than metronidazole.<sup>4,5</sup> The longer half-lives allow for single-dose or once-daily administration. In 2017, Petrina et al.<sup>5</sup> reported that secnidazole was similar to tinidazole and metronidazole in terms of its *in vitro* activity on microorganisms associated with BV. Based on clinical observation, secnidazole has limited impact on protective lactobacilli species within the vagina—an advantageous attribute for use in treating vaginal infections.<sup>5</sup>

Most recent to the U.S. market is secnidazole (Solosec®). Although secnidazole is new to the U.S., published data on its use in treating trichomoniasis, giardiasis, and hepatic and intestinal amebiasis, and then BV, first emerged in 1976.<sup>6</sup> Secnidazole was found to be as active as metronidazole against trichomoniasis and amebiasis, and it persisted longer in the bloodstream than did metronidazole and tinidazole.<sup>6</sup>

In 1978, published data supported the efficacy of a single 2-g dose of secnidazole in the treatment of urogenital trichomoniasis.<sup>7</sup> In the clinical portion of this tandem clinical and laboratory study of 140 subjects, the cure rate was 97% and tolerability was confirmed. Laboratory analysis on human subjects proved secnidazole similar to tinidazole in various pharmacokinetic properties.

According to a review article published in 1996, secnidazole was found to be rapidly and completely absorbed following oral administration.<sup>8</sup> Because of its longer terminal elimination half-life, single-dose secnidazole

# Much more recent data have supported the safety and tolerability of secnidazole 2 g in the treatment of bacterial vaginosis.

was found to be superior to other nitroimidazoles in the treatment of trichomoniasis and equal to metronidazole and tinidazole in the treatment of amoebiasis and giardiasis. Except for mild gastrointestinal upset, secnidazole was considered well tolerated. Side effects of secnidazole did not typically require intervention or discontinuation. Much more recent data have supported the safety and tolerability of secnidazole 2 g in the treatment of BV.<sup>9</sup>

The aforementioned review suggested a possible disulfiram-like reaction in patients who ingested alcohol within 24 hours after taking secnidazole.<sup>8</sup> However, more recent data on *in vitro* pharmacokinetic activity of secnidazole have identified no impact on ethanol metabolism, as it does not inhibit aldehyde dehydrogenase.<sup>10</sup> Therefore, unlike metronidazole, Solosec does not have an alcohol restriction in the U.S.<sup>11</sup>

The CDC published its most recent sexually transmitted infection treatment guidelines in 2015,<sup>2</sup> prior to FDA approval of Solosec in 2017. As such, many U.S. health-care providers remain unfamiliar with secnidazole. However, a plethora of published evidence spanning more than 5 decades supports the safety and efficacy of this agent in treating a variety of infections. Although secnidazole is FDA approved only for BV at present, future indications may be on the horizon. ●

**Brooke M. Faught is a women's health nurse practitioner and the Director of the Women's Institute for Sexual Health (WISH), A Division of Urology Associates, in Nashville, Tennessee. She is a Fellow of the International Society for the Study of Women's Sexual Health (ISSWSH). She states that she serves as a speaker and an advisory board member for AMAG, Duchesnay, and Therapeutic MD and as an advisory board member for Lupin Pharmaceuticals. Kecia Harris has more than 15 years' experience in infectious diseases, women's health, and chronic disease**

**research and education. She works at Syneos Health exclusively supporting Lupin Pharmaceuticals to bring emerging research related to the vaginal microbiome and dysbiosis to the forefront. She states that she is the Founder and Principal Manager of KD2 Consultants, LLC, a company focused on increasing knowledge around emerging health issues and policies for patients, government, and health and medical organizations. She is a Fellow of ISSWSH and the American Society of Sex Educators, Counselors and Therapists.**

## References

1. Lamp KC, Freeman CD, Klutman NE, Lacy MK. Pharmacokinetics and pharmacodynamics of the nitroimidazole antimicrobials. *Clin Pharmacokinet*. 1999;36(5):353-373.
2. CDC. Sexually Transmitted Diseases Treatment Guidelines. *MMWR Recomm Rep*. 2015;64(RR-03):1-137.
3. Doron SI, Beaulac KR, Dhand A, Snyderman DR. Mechanisms of resistance in metronidazole. In: Mayers DL, Sobel JD. *Antimicrobial Drug Resistance: Mechanisms of Drug Resistance, Volume 1*. Cham, Switzerland: Springer; 2017:281-287.
4. Rossignol JF, Maisonneuve H, Cho YW. Nitroimidazoles in the treatment of trichomoniasis, giardiasis, and amoebiasis. *Int J Clin Pharmacol Ther Toxicol*. 1984;22(2):63-72.
5. Petrina MAB, Cosentino LA, Rabe LK, Hillier SL. Susceptibility of bacterial vaginosis (BV)-associated bacteria to secnidazole compared to metronidazole, tinidazole and clindamycin. *Anaerobe*. 2017;47:115-119.
6. Benazet F, Guillaume L. Amoebicide and trichomonacide activities of secnidazole in the laboratory. *Bull Soc Pathol Exot Filiales*. 1976;69(4):309-319.
7. Videau D, Niel G, Siboulet A, Catalan F. Secnidazole. A 5-nitroimidazole derivative with a long half-life. *Br J Vener Dis*. 1978;54(2):77-80.
8. Gillis JC, Wiseman LR. Secnidazole. A review of its antimicrobial activity, pharmacokinetic properties and therapeutic use in the management of protozoal infections and bacterial vaginosis. *Drugs*. 1996;51(4):621-638.
9. Chavoustie SE, Gersten JK, Samuel MJ, Schwebke JR. A phase 3, multicenter, prospective, open-label study to evaluate the safety of a single dose of secnidazole 2 g for the treatment of women and postmenarchal adolescent girls with bacterial vaginosis. *J Womens Health (Larchmt)*. 2018;27(4):492-497.
10. Parajuli B, Kimble-Hill AC, Khanna M, et al. Discovery of novel regulators of aldehyde dehydrogenase isoenzymes. *Chem Biol Interact*. 2011;191(1-3):153-158.
11. Solosec prescribing information. Symbiomix Therapeutics, LLC (A Lupin Company); 2017. [dailymed.nlm.nih.gov/dailymed/fda/fdaDrugXsl.cfm?setid=551e43d5-f700-4d6e-8029-026f8a8932ff&type=display](https://dailymed.nlm.nih.gov/dailymed/fda/fdaDrugXsl.cfm?setid=551e43d5-f700-4d6e-8029-026f8a8932ff&type=display)