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The history of secnidazole

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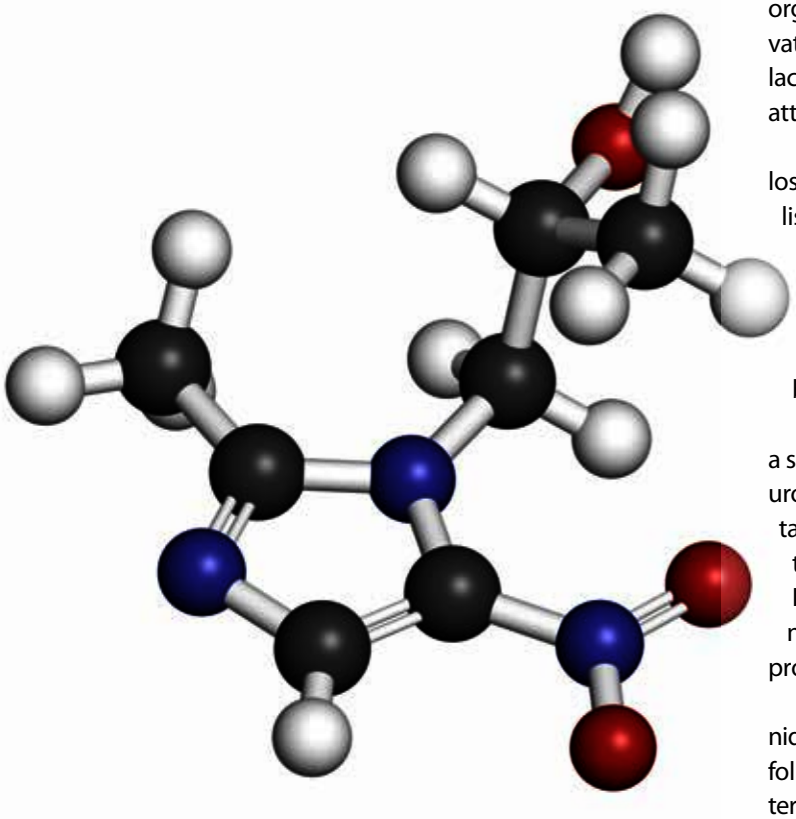
In September 2017, the FDA approved secnidazole for the treatment of bacterial vaginosis. Although new to the United States, secnidazole is a well-established anti-infective agent utilized worldwide for the treatment of various bacterial and parasitic infections. Published studies on secnidazole date 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.[1] Metronidazole is now considered first-line treatment in the United States for anaerobic bacterial infections, including bacterial vaginosis (BV).[2] 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.[3]

Several other nitroimidazoles have been introduced since metronidazole, including tinidazole, ornidazole, and secnidazole, which have longer half-lives than metronidazole.[4,5] The longer half-lives allow for single-dose or once-daily administration. In 2017, Petrina et al.[5] 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.[5]

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.[6] 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.[6]

In 1978, published data supported the efficacy of a single 2-g dose of secnidazole in the treatment of urogenital trichomoniasis.[7] 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.[8] Because of its longer terminal elimination half-life, single-dose secnidazole

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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.[9]

The aforementioned review suggested a possible disulfiram-like reaction in patients who ingested alcohol within 24 hours after taking secnidazole.[8] 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.[10] Therefore, unlike metronidazole, Solosec does not have an alcohol restriction in the U.S.[11]

The CDC published its most recent sexually transmitted infection treatment guidelines in 2015,[2] prior to FDA approval of Solosec in 2017. As such, many U.S. healthcare 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.

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