

Laboratory analysis of ranitidine and nizatidine products – Safety update

- On November 1, 2019, Janet Woodcock, director of the FDA's Center for Drug Evaluation and Research, provided an [update](#) regarding the ongoing [investigation](#) of the N-Nitrosodimethylamine (NDMA) impurity in [prescription](#) and [over-the-counter](#) ranitidine products.
 - [Nizatidine](#) is also being tested for NDMA because it is chemically similar to ranitidine.
- The FDA has tested numerous ranitidine and nizatidine products over the past few months and has released a [summary](#) of the NDMA levels of these products to date. The FDA concludes that the NDMA levels are similar to the NDMA levels expected from consuming common foods like grilled or smoked meats.
- The FDA also conducted tests that simulate what happens to ranitidine after it has been exposed to acid in the stomach with a normal diet and results of these tests indicated that NDMA is not formed through this process. Similarly, if ranitidine is exposed to a simulated small intestine environment, NDMA is not formed. However, the FDA must still test the drugs in the human body to fully understand if ranitidine forms NDMA.
- Although many of these levels of NDMA observed through FDA testing are much lower than the levels some third-party scientists first claimed, some levels still exceed what the FDA considers acceptable for these medicines.
- For reference, consuming up to 0.096 micrograms or 0.32 parts per million (ppm) of NDMA per day is considered reasonably safe for human ingestion based on lifetime exposure. The FDA has set the acceptable daily intake limit for NDMA at 0.096 micrograms or 0.32 ppm for ranitidine. The FDA is asking companies to voluntarily recall ranitidine or nizatidine if NDMA levels are above these thresholds.
- The FDA is asking manufacturers to continue conducting their own laboratory testing to examine levels of NDMA in ranitidine and nizatidine as well as to send samples to the FDA for testing. The FDA is also requesting that manufacturers of nizatidine test their drugs.
- The FDA is still working with manufacturers to investigate the true source of NDMA and to understand the root cause of the low levels of NDMA present in the drugs.
- The FDA's recommendations for consumers and patients have not changed. Consumers taking OTC ranitidine or nizatidine can consider using other OTC products approved for their condition.
- So far, the FDA and industry testing of medicines in the histamine-2 (H2) blocker and proton pump inhibitor (PPI) classes has identified NDMA only in ranitidine and nizatidine. The FDA's tests of samples of alternatives such as [Pepcid[®] \(famotidine\)](#), [Tagamet[®] \(cimetidine\)](#), [Nexium[®] \(esomeprazole\)](#), [Prevacid[®] \(lansoprazole\)](#) and [Prilosec[®] \(omeprazole\)](#) show no NDMA impurities at this time.
- Patients taking prescription ranitidine or nizatidine should speak with their healthcare provider about other treatment options. There are multiple drugs approved for the same or similar uses as ranitidine and nizatidine.
- Additionally, in the FDA's testing of ranitidine syrup, primarily used in neonates and pediatric patients, some samples yielded levels of NDMA above the acceptable daily intake level in some lots. Medicines with unacceptable levels are being recalled. The FDA is continuing their investigation of products used in the pediatric population. Testing of ranitidine for injection is still ongoing.

- The FDA will provide more information as soon as it is available.



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