

True or False? Nonsteroidal Anti-inflammatory Drugs (NSAIDs) should be taken with food

FALSE: For acute pain when a rapid onset of effect is desired, recommend taking NSAIDs on an empty stomach with a full glass of water. Food delays and may reduce the analgesic effect of NSAIDs and there is no reliable evidence that taking NSAIDs with food prevents adverse gastrointestinal effects.

Until recently, we have routinely advised patients to take NSAIDs with food to reduce the risk of common mild adverse effects such as dyspepsia and less common but serious adverse effects such as upper or lower gastrointestinal (GI) bleeding.¹ The rationale behind this advice is the theory that food protects the GI mucosa from the irritating and potentially ulcerative effects of NSAIDs. In actual fact there is no valid evidence that food provides this protection.²

On the other hand, there is good evidence that food delays the absorption of NSAIDs, increases the time to maximum plasma concentration and reduces maximum plasma concentration. This results in delayed onset and possibly decreased analgesic effect.³ For example, a single dose of ibuprofen 200mg taken on an empty stomach by healthy volunteers produced peak serum levels after approximately **45 minutes** but when taken after food, the absorption of ibuprofen was slower, and peak serum levels appeared between **1.5 and 3 hours** after ingestion.⁴

Systemic NSAID effects rather than “topical” effects appear to be the major cause of serious GI adverse effects associated with NSAID use. Prostaglandins are important mediators in the maintenance of the protective mucous lining the GI tract. By inhibiting prostaglandins NSAIDs reduce this protection and leave the mucosa more susceptible to the damaging effects of gastric acid and digestive enzymes.⁵ NSAID-induced platelet inhibition and reduction in mucosal blood flow may also be factors.⁴

Serious GI symptoms are more likely to occur with higher doses and longer duration of NSAID therapy.⁷ At OTC doses, severe complications for ibuprofen or naproxen are rare.⁶ The frequency of side effects

such as heartburn or dyspepsia with over-the-counter (OTC) NSAIDs is similar to that for acetaminophen.⁶ Chronic use of NSAIDs increases the risk of GI toxicity but short-term use for up to a week by a healthy person is not likely to cause significant adverse effects.⁷

NSAIDs have been uncommonly associated with esophagitis. Although this too may also be related to the systemic inhibition of the cytoprotective effect of prostaglandins, it may also be due to direct contact of NSAIDs with the esophagus; direct contact can be minimized taking NSAIDs with water and remaining upright for 20 to 30 minutes after taking the tablet or capsule.⁸

Counselling patients taking NSAIDs:

- Take NSAID tablets or capsules with at least 250 ml (8 ounces) of water
- If rapid onset of effect is desired, take on an empty stomach
- Do not lie down immediately after taking the NSAID tablet or capsule (remain upright for 20 to 30 minutes)
- If mild GI upset, try chewing gum, sucking a lozenge or a small amount of food. This increases saliva flow and helps to neutralize acid
- For more bothersome GI symptoms, consider OTC ranitidine, famotidine or omeprazole for duration of NSAID therapy. (Applies to short-term treatment of dyspepsia symptoms only. H₂RA's are not effective for prophylaxis of NSAID-induced GI bleeds.)

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References:

1. Tolstoi L. Drug-induced Gastrointestinal disorders. In Medscape online. June 26, 2002. Available at www.medscape.com/viewarticle/437034_3. Accessed May 2018
2. Do you need to take some painkillers with food to protect your stomach? In: The Conversation. Sept 30, 2015. Available at <https://theconversation.com/do-you-need-to-take-some-painkillers-with-food-to-protect-your-stomach-47156>. Accessed May 2018
3. Moore R, Derry S et al. Effects of food on pharmacokinetics of immediate release oral formulations of aspirin, dipyrrone, paracetamol and NSAIDs – a systematic review. BJCP 2015;80:381-388
4. Advil product monograph. Health Canada Drug Product Database. Available at https://pdf.hres.ca/dpd_pm/00040077.PDF
5. Wallace J. Prostaglandins, NSAIDs, and Gastric Mucosal Protection: Why Doesn't the Stomach Digest Itself? Physiological Reviews 2008;88:1547-1565 Available at <https://www.physiology.org/doi/abs/10.1152/physrev.00004.2008>
6. Rainsford K, Bjarnason I. NSAIDs: take with food or after fasting. J Pharm Pharmacol. 2012;64:465-9. Available at <https://www.ncbi.nlm.nih.gov/pubmed/22420652>
7. Feldman M. NSAIDs (including aspirin): Pathogenesis of gastroduodenal toxicity. In: UpToDate online. Last updated Nov. 28, 2017. Available at www.uptodate.com (subscription required).
8. Szymanski, T. Drug-Induced Esophagitis: What Pharmacists Need to Know. Pharmacy Times. Dec. 28, 2016. Available at <http://www.pharmacytimes.com/contributor/thomas-szymanski-pharmd-candidate-2017/2016/12/drug-induced-esophagitis-what-pharmacists-need-to-know>