

# Tessalon Perles, Often Prescribed and Potentially Dangerous

Benzonatate overdoses are fast-moving, and sudden deterioration can occur at any time

By Leon Gussow, MD

George W. Bush, if he were a medical toxicologist, might say that benzonatate (marketed as Tessalon Perles or generic preparations) is one of the most “misunderestimated” medications on the formulary.

Most patients—and many physicians, I suspect—do not realize just how dangerous this commonly used, nonopioid prescription cough suppressant can be. After all, it was approved by the Food and Drug Administration in 1958 for patients over age 10 as an antitussive, and it is often viewed as a safer alternative to codeine-containing cough medicines.

The FDA, however, also issued a 2010 safety announcement that unintentional ingestion of benzonatate by children under 10 could be fatal. Toddlers under 2 are at special risk because they are most prone to exploratory ingestion and may find the drug attractive because its yellow gelatin capsule can be easily mistaken for candy.

The FDA review concluded, “When a cough suppressant is truly necessary, dextromethorphan or even codeine might be a safer choice [than benzonatate].” (*Med Lett Drugs Ther.* 2011; 53[1357]:9.) More than three million prescriptions for benzonatate were written in 2020 despite its high-risk profile, and reported exposures increased from 2012 to 2019. Benzonatate can be so dangerous, and emergency physicians should know about its risks in overdose and for unintentional exposure in young children.

## A Sodium Channel Blocker

Benzonatate is structurally similar to amino ester local anesthetics like procaine and tetracaine and, like those agents, reversibly inhibits sodium channels, most significantly in the heart

water → sodium chloride → sodium channel blocker. (Don't laugh; this is how I got through medical school.)

## Narrow Safety Margin

Benzonatate is rapidly absorbed from the GI tract, with initial manifestations of overdose occurring in the first hour after ingestion, often within the first 15 to 20 minutes. One or two capsules can cause an overdose in a toddler, especially if the capsule is chewed or crushed. Direct exposure of benzonatate to the oropharynx if the capsule is chewed or punctured can cause choking from the local anesthetic effect or a hypersensitivity reaction.

A teenage girl in one case who ingested only 12 pills experienced seizures and cardiac arrest. (*Pediatr Emerg Care.* 2016;32[3]:197.) Sudden collapse shortly after taking an overdose of a cough medicine is more indicative of cardiotoxicity from benzonatate-induced sodium channel blockade than of an opioid overdose. No antidote is available to reverse the toxic effects of benzonatate, unlike opioids.

## Good Supportive Care

Wikipedia says benzonatate overdose requires treatment focused on the “removal of gastric contents and on managing symptoms of sedation, convulsions, apnea, and cardiac arrhythmia.” This, like much medical advice on Wikipedia, is only half true. Certainly, treating seizure activity and supporting respiratory and cardiovascular function are key in managing these cases.

## Benzonatate overdose can result in sudden collapse from seizures and cardiac dysrhythmias, and no antidote is available

and peripheral nervous system. The most feared outcome of benzonatate overdose, as with other sodium channel blockers such as tricyclic antidepressants, is sudden collapse from seizure activity and cardiac dysrhythmias. A prolonged QRS interval can be seen early after ingestion and may precede seizures or cardiovascular collapse.

Mnemonic mnote: My memory hack for recalling that benzonatate is a sodium channel blocker relies on the following sequence: Tessalon Perles → pearls → oysters → sea water → salt

Exposures to benzonatate can be serious, with a risk of seizures or cardiac dysrhythmias, or trivial, in which case the patient should do well with observation and symptomatic treatment. No gastric decontamination is indicated if an exposure is trivial. A serious case has the risk for sudden deterioration because the medication is so quickly absorbed into the system.

It is unlikely that giving activated charcoal could be accomplished early enough or take effect in time to change that outcome. Attempting to administer



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activated charcoal to an unstable patient increases the risk for aspiration. And, as I've said frequently in previous columns, gastric lavage is virtually never indicated. Of course, giving a dose of charcoal through an NG tube would not be unreasonable for a patient who has been intubated for other indications.

A prolonged QRS interval should be treated with bolus doses of sodium bicarbonate, as in overdoses from other sodium channel blockers such as tricyclic antidepressants and diphenhydramine. Early manifestations of significant exposure such as restlessness and tremors can be treated with benzodiazepines. Intravenous lipid emulsion therapy is the treatment of choice for severe reactions to injections of local anesthetic, and it would be reasonable to try this in benzonatate ingestions with severe manifestations or arrest. There is, however, no real evidence about whether that would be effective.

As always, consultation with a regional poison center can help you manage these cases, but benzonatate overdose can be so unpredictable and fast-moving that the emergency physician should be prepared for sudden deterioration at any time.

The FDA recommends that any patient who is prescribed benzonatate be informed of its potential toxicity and advised to keep the medication in a childproof container out of the reach of children. Patients should also be

told to swallow the medication whole, not chew, suck, crush, or dissolve the capsules. The maximum single dose is 200 mg, and the total daily dose should not exceed 600 mg. Only the amount needed for symptomatic relief of transient cough symptoms should be dispensed. Benzonatate should not be prescribed to treat cough in patients under 10.

A recent retrospective review of pediatric benzonatate exposures reported to U.S. poison control centers from 2010 to 2018 found increasing numbers of unintentional ingestions in children 5 and older and increasing numbers of intentional ingestions in children 10 to 16. (*Pediatrics.* 2022;150[6]:e2022057779; <https://bit.ly/43RNc3C>.) Relatively few cases had severe outcomes, and all emergency physicians should be aware that these cases have the potential to go south quickly. **EMN**



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