



## ToxTalks: Substances of Use and Misuse

### *Highlights from the Field*

Blue Ridge Poison Center

| University of Virginia Health

| May 2023

## Tianeptine

*This is a special edition dedicated to substance use & misuse. Look for more of these editions as we encounter emerging and growing concerns. Funding support provided by the CDC's Prescription Drug Overdose: Prevention for States program in partnership with the Virginia Department of Health.*



### Case

A young male intentionally took tianeptine. He became unresponsive and a bystander called EMS and naloxone was administered without success. Upon arrival to the emergency department, the patient was noted to have miosis, sedation, and respiratory depression. He was given two doses of naloxone 0.4 mg intravenous with reversal of sedation and respiratory depression. His urine drug screen was negative. His urine was sent for advanced analytics and found to be positive for tianeptine.

### Overview

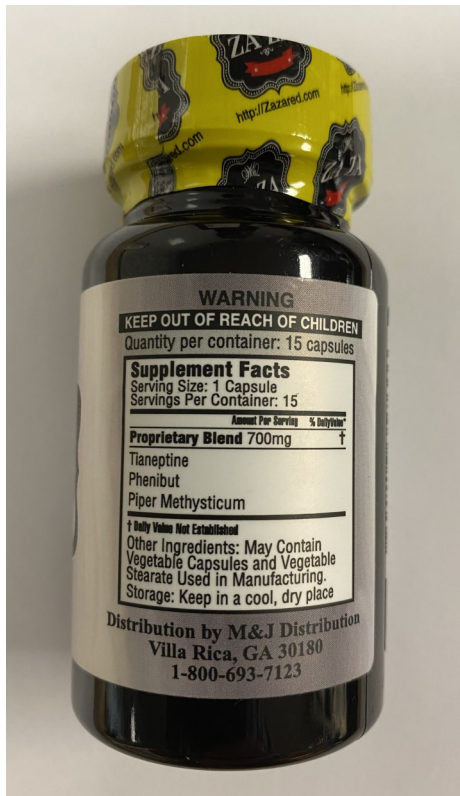
United States (U.S.) poison centers have seen an increase in calls regarding the use of “gas station dope,” otherwise known as tianeptine. Use is particularly high in other regions of the U.S. but Virginia Poison Centers have also received calls pertaining to this emerging substance and it is readily found in stores around the University of Virginia.

### What is tianeptine?

Tianeptine is an atypical tricyclic drug used as a prescription antidepressant in Europe, Asia and Latin American. It has no FDA approved use in the U.S. but it has been sold as a dietary supplement under the

**Free. Fast. Expert help.**  
**24 hours a day, 7 days a week.**

**POISON**  
**HELP**  
**1-800-222-1222**



names “ZaZa” and “Tianaa,” and is widely available over the internet. According to a study analyzing Reddit posts about tianeptine, the substance is commonly used to self-treat anxiety, depression, and opioid withdrawal. Its use is associated with other substances including phenibut and kratom which are often categorized as “nootropics,” or cognitive enhancers.

Though initially sold as a dietary supplement, tianeptine does not meet criteria for a dietary ingredient as defined by the FDA. Products containing tianeptine that are marketed as dietary supplements are therefore considered adulterated under the Federal Food, Drug and Cosmetic Act. Tianeptine containing products continue to be sold now but are marketed as nootropics or not labeled as tianeptine to avoid warnings from the FDA. For instance, ZaZa and Tianaa products are now sold as mixtures of other substances including vitamins, phenibut and possibly unlabeled tianeptine. Tianeptine is listed as a schedule II controlled substance by Michigan and Alabama due to its opioid-like effects.

### **How does tianeptine work?**

Tianeptine is structurally similar to tricyclic antidepressants but has different mechanisms of action that are not entirely understood. Unlike other tricyclics, it is known to increase serotonin reuptake, leading to some confusion as to its action as an antidepressant. One study looking at neurotransmitter levels in human subjects after a single dose of tianeptine showed decreased serum levels of norepinephrine/serotonin and increased serum levels of dopamine. In animal studies it has been shown to reduce the stress response from the hypothalamic pituitary adrenal axis. Tianeptine has also been shown to exhibit mu and delta opioid receptor agonism.

### **What symptoms are caused by tianeptine?**

Tianeptine products claim to help calm anxiety and depression. Due to the opioid-like effects, users report a feeling of euphoria with use and can develop dependence. Symptoms of toxicity include either agitation or lethargy, tachycardia, elevated blood pressure, nausea, vomiting, diaphoresis, and respiratory depression. In high doses, cases have been reported to resemble an opioid overdose that is responsive to naloxone. Users can develop a dependence on tianeptine, resulting in users taking escalating, large doses of tianeptine. Withdrawal mimics opioid

## **BRPC STAFF**

### **Director**

Christopher Holstege, MD

### **Nursing Director**

John Gilday, MSN, NREMT-P

### **Medical Toxicologists**

Andy Baer, MD

Nathan Charlton, MD

Justin Rizer, MD

### **Medical Toxicology Fellows**

Ryan Cole, MD

Will Goodrich, DO

Abigail Kerns, MD

David Schaffer, MD

### **Epidemiologist**

Rita Farah, PharmD, MPH, PhD

### **Senior Poison Specialist**

Jennifer Horn, BSN, CSPI

### **Poison Specialists**

Andre Berkin, BSN, CSPI

Michael Brookshire, BSN, CSPI

Katerina Deasy, BSN

Teresa Kinzie, RN, CSPI

Liz Martin, RN

Lisa Turner, BSN, CSPI

Steven Yoder, BSN, CSPI

### **Public Health Educator**

Kristin Wenger, MA, BS

### **Administrative Specialist**

Heather Collier

Amanda King

withdrawal with symptoms including agitation, anxiety, gastrointestinal distress, and myoclonic jerking.

### **How are symptoms treated?**

Treatment of both tianeptine toxicity and withdrawal is with symptomatic and supportive care. For lethargy or respiratory depression from toxicity, naloxone has been reported to work to reverse opioid effects. Agitation due to toxicity or withdrawal can be treated with benzodiazepines, alpha-2 agonists, antipsychotics, or barbiturates. There is limited information on the use of buprenorphine-naloxone for tianeptine use disorder but it has been reported as a possible treatment.

For guidance treating patients with tianeptine toxicity call the poison center at 1-800-222-1222. Medical toxicology experts are standing by for free consultation 24-hours a day, every day.

References available upon request.

Poison safety tips, free materials, & more:

