

# Brodifacoum Poisoning Associated with Synthetic Cannabinoid Use

## Fact Sheet for Physicians

### **BRODIFACOUM INFORMATION**

#### **What is Brodifacoum?**

Brodifacoum is a long acting anticoagulant rodenticide (LAAR), or “superwarfarin,” originally designed to be used as a rodenticide against rodents that had developed resistance to warfarin.

#### **Mechanism of Action**

Like warfarin, brodifacoum binds to vitamin K epoxide reductase (VKOR), preventing reduction of oxidized vitamin K. Reduced vitamin K is an essential cofactor for  $\gamma$ -glutamyl carboxylase and thus for the activation of clotting factors II, VII, IX and X.

#### **Key Differences Between Brodifacoum and Warfarin**

Brodifacoum binds VKOR more strongly than warfarin, and it is more hydrophobic. These differences portend a lower toxic dosage, lipid accumulation, and a longer elimination half-life. The half-life of brodifacoum in humans has been reported to range from 16 days to more than 30 days.

#### **Brodifacoum Testing**

Brodifacoum can be quantified by the Wisconsin State Laboratory of Hygiene (WSLH) as well by a private laboratory. See reverse side of the page for WSLH testing instructions.

#### **Treatment and Follow Up of Coagulopathic Patients**

Patients with brodifacoum poisoning require high doses of vitamin K, as much as 200 mg per day, to prevent bleeding and normalize INR. This dose may be required for weeks to months in order to prevent coagulopathy and the development or persistence of life-threatening bleeding.

**On discharge from the hospital, patients should receive daily vitamin K and have an appointment for a recheck INR within 3 days and a repeat brodifacoum level within 2-4 weeks.**

**Because failure to continue vitamin K treatment after discharge can result in reoccurrence of bleeding, hospital readmission, or death, discharge planning should include access to and availability of vitamin K, as well as appropriate follow-up.**

Vitamin K can be expensive. Patients without insurance should be assessed for preeligibility for presumptive BadgerCare and, if eligible, enrolled in BadgerCare prior to discharge due to the cost of vitamin K.

Providers should call the Wisconsin Poison Control Center (1-800-222-1222) to report cases, treatment guidance, and for outpatient case management. Cases should also be reported to your local health department.

## QUANTITATIVE BRODIFACOUM TESTING

In response to the outbreak of coagulopathy secondary to brodifacoum poisoning from use of contaminated synthetic cannabinoids, the Wisconsin State Laboratory of Hygiene (WSLH) has developed a quantitative brodifacoum test. This test will allow providers to track brodifacoum levels over time which may aid in treatment decisions.

Providers should obtain quantitative brodifacoum levels on patients connected to the outbreak every 2-4 weeks until coagulopathy resolves. WSLH will provide this testing free of charge to patients. Results will also be shared with the Wisconsin Poison Center which is monitoring these patients.

### Testing Instructions:

1. Write in “Brodifacoum Testing” on a standard WSLH lab form. The toxicology form used for blood lead testing is preferred, but the communicable diseases form is acceptable.
2. Whole blood should be provided in an EDTA (purple top) tube; citrate tube is acceptable.
3. One (1) mL of total sample is optimal. The minimum volume for the test is 0.5 mL.
4. Blood should be stored frozen if possible, though refrigeration is also acceptable.
5. Packaging can be consistent with other clinical samples, i.e. specimen container packaged with absorbent in a secondary container. A cold-pack or similar is requested.
6. Clearly mark that sample is to the attention of Noel Stanton, WSLH Ag Drive.

→ Questions regarding specimen collection can be directed to:

**Noel Stanton**

608-224-6251,  
[noel.stanton@slh.wisc.edu](mailto:noel.stanton@slh.wisc.edu)

or

**Matt Roach**

608-224-6273,  
[matthew.roach@slh.wisc.edu](mailto:matthew.roach@slh.wisc.edu).

→ Questions regarding the outbreak of coagulopathy secondary to synthetic cannabinoids can be directed to:

**Erica Wilson**

608-266-5421,  
[erica.wilson@wi.gov](mailto:erica.wilson@wi.gov).

→ Questions about treatment of patients can be directed to:

Wisconsin Poison Center  
1-800-222-1222.



**Wisconsin Department of Health Services** | Division of Public Health

[www.dhs.wisconsin.gov/chemical/synthetic-cannabinoids.htm](http://www.dhs.wisconsin.gov/chemical/synthetic-cannabinoids.htm)

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