Maryland Poison Center
UNIVERSITY OF MARYLAND SCHOOL OF PHARMACY

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toxtidbits

THE MARYLAND POISON CENTER'S MONTHLY UPDATE.
NEWS. ADVANCES. INFORMATION.

Treatment of Warfarin Over-anticoagulation: Vitamin K_1 Update

Warfarin was developed in 1948 and originally marketed as a rodenticide before being used as a therapeutic anticoagulant. The WARF in "warfarin" comes from Wisconsin Alumni Research Foundation (who funded the research behind its development) with the –arin stemming from coumarin. In 2010, a total of 4,295 cases of warfarin poisonings were reported to poison centers in the United States, with 824 patients requiring treatment at a health care facility.

Warfarin is a commonly prescribed oral anticoagulant for patients with cerebrovascular disease, cardiac dysrhythmias, and thromboembolic disease. Warfarin inhibits vitamin K 2,3-epoxide reductase, an enzyme responsible for the reduction of K_3 to the active K_1 form, which is an essential cofactor in the synthesis of clotting factors II, VII, IX, and X. Warfarin toxicity is reversed by the administration of vitamin K_1 and in life-threatening cases, FFP and/or 4 factor prothrombin complex.

In February 2012, the American College of Chest Physicians published the ninth iteration of the Antithrombotic Guidelines to provide a more efficient guide for practitioners to manage elevated INR's in patients requiring anticoagulation *(Chest 2012;141(2)(Suppl): e152S-e184S)*. Several minor changes have been made in the indication of vitamin K_1 for the reversal of warfarin toxicity. The updated recommendations are summarized below:

Indications for the use of vitamin K_1 for warfarin reversal in patients requiring anticoagulation

INR	Recommendations
4.5-10 + No evidence of bleeding	No vitamin K_1
> 10 + No evidence of bleeding	Vitamin K_1 2.5-5 mg PO*
Active bleeding	4 factor prothrombin complex + Vitamin K_1 5-10mg IV

*Dose Maryland Poison Center recommends

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Sweet Clover contains coumarin

Did you know?

New anticoagulants designed and approved for use in the United States such as Pradaxa/*dabigatran etexilate* (factor IIa inhibitor) and Xarelto/*rivaroxaban* (factor Xa inhibitor) provide the benefits of having less food-drug and drug-drug interactions, and also a reduction in the need for patient monitoring.

However, no antidotes for the reversal of toxicity induced by any of these agents are currently available.

Contact your poison center about any cases of suspected overdoses with these newer anticoagulants.

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