ALTERNATIVE TO BLEEDING CAUSED BY TRADITIONAL AND NOVEL ORAL ANTICOAGULANTS: THE FUCOSYLATED CHONDROITIN SULFATE.

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Introduction: Oral anticoagulant therapy is most suitable for patients in need of prophylaxis of thromboembolic diseases for a long period. However, warfarin and new oral thrombin and factor Xa inhibitors continue to present risk of bleeding. The fucosylated chondroitin sulfate (fucCS) is a polysaccharide extracted from the sea cucumber L. grisea that exhibits potent anticoagulant and antithrombotic activity after oral administration.

Objectives: In this study, we compared the effects of fucosylated chondroitin sulfate on coagulation, thrombosis and bleeding with oral anticoagulants available in clinical.

Methods: Wistar rats received different doses of oral anticoagulants by gavage. Coagulation parameters were assayed for aPTT, PT, TT and anti-IIa/Xa activities. Antithrombotic activity was investigated using vena cava model. Bleeding tendency was evaluated using the bleeding time model.

Results: The doses of warfarin, apixaban, dabigatran, rivaroxaban and fucCS which caused a reduction of approximately 85% of thrombus formation were respectively 2, 20, 9, 18 and 50 mg/kg. Coagulation parameters were also altered for all anticoagulants, indicating absorption in the gastrointestinal tract. At doses that completely inhibit thrombus formation, clinical available oral anticoagulants led to an intense blood loss in animals, while fucCS has showed no bleeding tendency.

Conclusions: The oral direct thrombin and Factor Xa inhibitors are currently replacing warfarin in the anticoagulant therapy. Caution is needed in the use of these anticoagulants to ensure an effective therapeutic effect and a low rate of adverse effects. A natural polysaccharide with antithrombotic and anticoagulant properties after oral administration could be an interesting alternative.

Key words: Fucosylated chondroitin sulfate, Novel oral anticoagulants, bleeding tendency.
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