

Letters to the Editor

Goker H, Haznedaroglu IC, Ercetin S, et al: Haemostatic actions of the folkloric medicinal plant extract Ankaferd Blood Stopper®. *J Int Med Res* 2008; 36: 163 – 170.

Dear Sir

Ankaferd Blood Stopper® (ABS) is a unique folkloric medicinal plant extract, which has historically been used in Turkish traditional medicine as a haemostatic agent. I read with interest the article by Goker *et al.*¹ In that paper, the *in vitro* effects of ABS on haemostatic parameters were investigated. When added to plasma or serum, ABS induced very rapid formation of a protein network and erythrocyte aggregation. The levels of coagulation factors II, VII, VIII, IX, X, XI and XIII were not affected by ABS, but plasma fibrinogen activity and antigen levels decreased following the addition of ABS, in parallel with a prolongation of thrombin time. Total protein, albumin and globulin levels also decreased after the addition of ABS. This study suggested that ABS stimulates the formation of an encapsulated protein network that provides focal points for erythrocyte aggregation. In the formation of this protein network, fibrinogen was used as well as total protein, albumin and globulin, but it is unknown whether fibrinogen must be present. For this reason the activity of ABS in patients with afibrinogenaemia may be interesting and no study has been carried out on this.

Afibrinogenaemia is a rare autosomal recessive disorder characterized by the absence of fibrinogen. Here we report the case of a 6-year old girl with afibrinogenaemia who had cut the first finger of her left hand with a knife. We learned that the patient had previously been admitted to another hospital and had been sutured and dressed. The following day because of active bleeding, she

was brought to the Department of Paediatric Haematology at Selcuk University. Her finger dressings were opened revealing gross haemorrhage between the sutures. An ABS spray was applied to the haemorrhagic wound and it was redressed with a wet tampon including ABS. The haemorrhage was stopped successfully.

This experience demonstrated that ABS was effective in a patient with afibrinogenaemia, hence it can be concluded that fibrinogen appears not to be a necessary component for formation of the protein network although, if present, it would appear to be utilized. Nevertheless, haemostasis can also be established in the absence of fibrinogen following protein network formation. The use of ABS for different types and degrees of severity of bleeding associated with afibrinogenaemia will show the effectiveness of this agent. On the other hand, the use of plasma fibrinogen preparations for patients with afibrinogenaemia increases the cost of treatment and fresh frozen plasma is also a blood product which carries a number of risks for patients. For skin and mucous haemorrhages in patients with afibrinogenaemia, ABS appears to be an effective agent, with no blood product risks, that can lower the cost of treatment.

Conflicts of interest

The authors had no conflicts of interest to declare in relation to this article.

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Received 15 September 2008

Reference

1 Goker H, Haznedaroglu IC, Ercetin S, *et al*: Haemostatic actions of the folkloric medicinal plant extract Ankaferd Blood Stopper®. *J Int Med Res* 2008; **36**: 163 – 170.

Dear Sir

We express our gratitude to Drs Albayrak and Çalışkan, for furthering development of the 'Ankaferd-induced haemostatic network' hypothesis by pointing out their observation that fibrinogen is not absolutely necessary for the haemostatic action of Ankaferd Blood Stopper® (ABS). Scanning electron microscopy images clearly show that the ultrastructural cellular mechanism of action of ABS involves the very rapid (< 1 s) formation of a specific protein network which acts as an anchor that is vital for erythrocyte aggregation by the classic clotting model.¹ In addition, ABS has been shown not to affect individual coagulation factors and platelets (Fig. 1).¹

By means of 'a healthier view of history', as pointed out in *Nature* a decade ago, the medicine of Ottoman hakims is nowadays considered as 'eclipsed no more'.² Turkish

physicians, the progeny, have the opportunity to stop bleeding with ABS,¹ an herbal Ottoman medicine consisting of five plants, which has been used for centuries to manage haemorrhagic infected skin wounds and has now been approved by the Turkish Ministry of Health as a modern haemostatic agent.³ Phase I studies are complete and ABS is currently being studied for the treatment of Crimean-Congo haemorrhagic fever with promising preliminary results, based on its anti-infective⁴ and haemostatic efficacies even in cases with defective platelets and/or coagulation factors.^{1,5 - 9} An ABS protein library involving vascular endothelium, blood cells, angiogenesis, cellular proliferation, vascular dynamics and cellular mediators is currently being investigated to determine the potential role of ABS in a range of pathological states, including neoplastic disorders, infectious

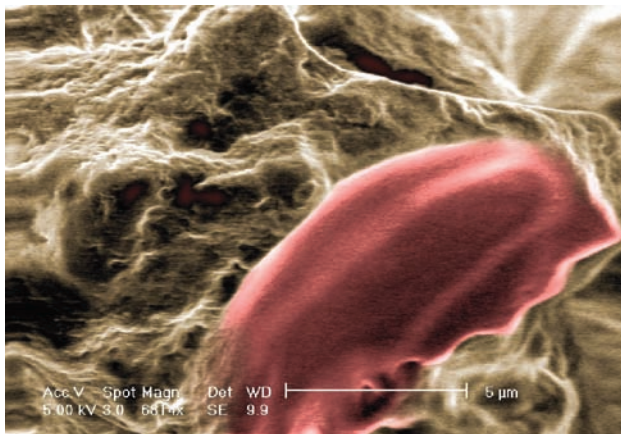


FIGURE 1: Scanning electron microscope image taken after the application of Ankaferd Blood Stopper® (ABS) to whole blood and showing that an ABS-induced protein network has developed that enables aggregation of red blood cells to establish a cell-based haemostatic action (original magnification ×6814)

diseases, inflammation, premature aging and atherosclerosis.

Conflicts of interest

The authors had no conflicts of interest to declare in relation to this article.

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