Investigating the Use of Pelargonium sp. in Haemostatic Wound Dressing to Decrease Platelet Activation Time in Swine Blood

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More than a million people die annually due to exsanguination following trauma. The aim of this project is to shorten the platelet activation time. It was hypothesized that a wound dressing with haemostatic properties can be developed by incorporating a traditional medicinal plant from the indigenous Geraniaceae family with different members of this family having different haemostatic properties. During this project cost efficiency and the effectivity of the haemostatic quality were tested. Different anticoagulants were compared namely sodium citrate, heparin and EDTA . The specimens were collected in heparin tubes as anticoagulant as it does not interfere with platelet function. The different plants' haemostatic qualities were compared to one another in extract (oil), leave and plant juice form. Softening oils namely sweet oil, coconut oil and sunflower oil were compared to mediate the release of the active ingredients when placed on a wound. Different concentrations from both the plant oil as well as the softening oil were compared with one another to determine the optimal concentration. All experiments were done with swine blood received from an abattoir. Pelargonium graveolens tested to be the most effective with the leaves the optimal component followed by the juice and the oil although minimal clinical significance between the components were observed. The oil produced by steam distillation is a very stable product with a long expiration date. For this reason, the oil is selected to form part of the final dressing. 0.2ml of sweet oil will be used in the final product as it is more cost effective and reduces the risk of loss of oils. Cost analyses shows that the wound dressing costs a staggering 68% less than the current commercial product.

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