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Investigation of plantain sheath/stem, cassava leaf and snail bluish liquid extracts for hemostatic property using human blood *in vitro*

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nhabitants of rural areas in most West African countries have limited access to health facilities and as a result walk long distances to seek health care in urban areas whenever they are injured. The excessive loss of blood by such individuals sometimes leads to death. In order to minimize blood loss from such injured individuals which may lead to dead, liquids from plantain sheath/stem, cassava leaf and snail are administered on the injured areas before seeking medical care. The present study investigates Musa paradisiaca sheath/stem, Manihot esculanta leaf and Achatina marginata bluish liquid extracts for hemostatic property using human blood in vitro. The presence of tannins and flavonoids in Musa paradisiaca sheath/ stem, Manihot esculanta leaf and Achatina marginata bluish liquid extracts is supported by literature which stated the said phytochemicals possess hemostatic property. Morphological studies showed the formation of a protein network on addition of Musa paradisiaca sheath/stem, Manihot esculanta leaf and Achatina marginata bluish liquid extracts to fresh serum, plasma and whole blood. The protein network formed as extracts were added to serum, plasma and whole blood could be the result of interactions between tannins found in extracts and proteins in blood components microscopic observation revealed aggregation of red blood cells as liquid extracts were added to whole blood. The high molecular weight of fibrinogen in whole blood, tannins and flavonoids of the extracts could have accounted for the red blood cell aggregation. Insoluble proteins increase blood viscosity and inhibit movement of the red blood cells. Coagulatory potencies of the liquid extracts in blood components were evaluated by prothrombin times in One and Two-Stage prothrombin time experiments. Prothrombin Times (PT) was compared with a standard prothrombin time for in vitro coagulation. The one stage prothrombin time test showed a significantly lesser time for the snail bluish liquid extract (PT=10.02 seconds) at a volume of 0.8 ml (P<0.05), followed by plantain sheath/stem extract (PT=20.71 seconds) and lastly cassava leaf (PT=33.43 seconds). The snail bluish liquid extract had a significantly lesser PT when compared to the standard, liquid plastin (PT=11.0-12.5 seconds) at the volume of 0.8 ml (p<0.05). There was a significant decrease in prothrombin time (P<0.05) as volumes of the snail bluish, plantain sheath/stem and cassava leaf liquid extracts were varied from 0.80 to 1.00 ml. The PT for snail bluish and plantain sheath/stem liquid extracts at the volume of 0.9 ml was 8.52 and 10.79 seconds respectively, whereas for cassava leaf liquid extract at the volume of 1.0 ml PT was 14.42 seconds. Prothrombin times for varied volumes of snail bluish and plantain sheath/stem liquid extracts when compared to PT for the standard, liquid plastin (PT=11.0 to 12.5 seconds), revealed that extracts possessed hemostatic property. As volumes of extracts were increased, the time for clot formation reduced. Thus PT depended on the volumes of liquid extracts. The two-stage prothrombin time test for the blend of snail bluish and plantain sheath/stem liquid extracts (1:1) gave a significantly shorter PT (18.20 seconds) when compared to the generalized PT considered for hemostatic substances (20 seconds) (P<0.05). Therefore the snail bluish, plantain stem and cassava leaf liquid extracts and the blend of snail bluish and plantain stem liquid extracts possess hemostatic property. Thus the results in this research work support the local use of liquid extracts from Musa paradisiaca sheath/stem, Manihot esculanta leaf and Achatina marginata as hemo-statics against external bleeding caused by injuries.

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