HP-42: Phytochemical study and anti-hemolytic activity from a local plant (*Ecballium elaterium*)

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Subject description: Despite advancements in living conditions, anemia persists as a complex health concern, necessitating specialized investigations for effective treatment. Pathological hemolysis, often presenting as anemia, involves the exaggerated breakdown of red blood cells, with potential hereditary or acquired origins.

Objectives: This study aimed to accomplish two main objectives: firstly, to analyze the phytochemical composition of distinct parts of Ecballium elaterium (including stem, leaf, root, and fruit); secondly, to investigate the effects of extracts derived from these various plant parts within three induced hemolysis models – specifically, hemolysis induced by salicylic acid, sodium chloride, and the synthetic detergent triton X-100.

Methods: the total polyphenols, flavonoids, and tannins of different parts extracts were estimated by colorimetric assays. Hemolysis induction tests were performed at different concentrations with salicylic acid, sodium chloride and triton X-100, these latters have the ability to cause hemolysis of red blood cells. In addition, studies are being conducted the anti-hemolytic activity of *Ecballium elaterium* extracts against hemolysis induced by different agents.

Results and discussion: The results showed that fruit extract was the richest in phenolic compound. The level of polyphenols total was about 2.66 ± 0.04 g EAG/ 100g DM, that of flavonoids was 4.84 ± 0.08 g EQ/100 g DM, and that of tannins was 0.70 ± 0.05 g EAT/100 g DM. He is followed by leaf and stem extracts. The root extract was the poorest in terms of phenolic compound. The three hemolytic models used in this study, namely salicylic acid, sodium chloride and triton X100, have been shown to be very effective, since they have proven capable of causing damage to the plasma membrane of blood cells red and induce almost total hemolysis rates. In the case of hemolysis induced by salicylic acid, the leaf extract gave the best anti-hemolytic effect with an IC50 = 0.418 mg/ml. When hemolysis was induced by sodium chloride, it was the fruit extract that gave the best anti-hemolytic activity, since its IC50 was around 0.418 mg/mL. Finally, when the hemolysis inducer was triton X-100, the tested extracts showed almost no anti-hemolytic activity.

Conclusion: The anti-hemolytic effects of the different extracts of *Ecballium elaterium* produced *ex vivo* on human erythrocytes have given good results for hemolysis induction by salicylic acid and sodium chloride, and no anti-hemolytic activity for hemolysis induced by triton X-100.

Keywords: Ecballium elaterium, hemolysis, phenolic compound, anti-hemolytic