Effect of Administration of Aqueous Extract of *Securidaca Longepedunculata* Stem Bark on Enzymes of the Small Intestine Allozan Induced Diabetic Rat

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ABSTRACT:
The stem barks of *Securidaca longepedunculata* are used traditionally across Africa for the treatment of diabetes, cancer, metabolic diseases and asthma. This study was aimed at investigating the potential enzyme activities of the *S. longepedunculata* on the small intestine. Aqueous extracts of *S. longepedunculata* were tested *in vivo* on animal models: A total of 12 Wister rats were assigned into four (I–IV) groups of three animals each. Group I served as the control and was administered 0.5mL of distilled water. Groups II–IV were given 0.5, 1 and 2mg/kg body weight of *S. longepedunculata* stem bark extracts. The activities of the following enzymes, Alanine transaminase (ALT), Lactate dehydrogenase (LDH), Alkaline phosphatase (ALP), Aspartate transaminase (AST), were assayed in the small intestine. The result revealed a significant reduction in ALP and LDH. This gives an indication that the administration of aqueous extract of *securidaca longepedunculata* can elicit detrimental effect in the small intestine of the albino rat. Also the result obtained in the qualitative analysis shows the presence of phytochemicals such as: saponin, flavonoid and terpernoid.

Keywords: Intestinal drug Absorption; Drug-Enzyme Interaction; Natural Product; Phytochemistry.
Introduction

- **Medicinal plants** and its increasing usage have been previously reported for its therapeutic value in treatment of varieties of ailment.
- World Health Organization (WHO) emphasized this, when it defined medicinal plants as that, which can be used as infusion or decoction (WHO, 1997)
- *Securidaca longepedunculata* have shown promising therapeutic potentials such as antimicrobial and antioxidant properties (Da Costa et al., 2013).
- Series of public health concerns and apprehensions such poor understanding of drug and enzyme interaction surrounding its safety have also been progressively documented (Elvin-Lewis, 2001; Raynor et al., 2011).
- Hence, the need to investigates the effect of *S. longepedunculata* aqueous extract on the enzyme activities of the small intestine, with reference to Allozan induced diabetic mellitus disease condition in animal models.
Results and discussion

- Enzyme activities Assayed
  - ALP
  - LDH
  - AST
  - ALT

Concentration of Aqueous extract in (mg/kg)

- Distilled water
- 0.5
- 1
- 2
RESULTS AND DISCUSSION

- The enzymes were selected based on their specific location in the cell (Malomo, 2000; Yakubu et al., 2003).
- There is a significant difference in ALP, LDH and ALT activity. Any significant difference in enzyme activity may be as a result of toxicity, presumably by leakage through altered cell membrane (Akanji and Ngaha, 1989).
- The significant reduction in LDH activity is quite understandable since it is in close proximity to the plasma membrane.
- The non-significant activity in AST may be due to non-toxicity of the extract in the Rat small intestine (Shahjahan et al., 2004).
- Saponin complexes the cholesterol in the plasma membrane which can cause a reduction in the activity of ALP (Xu et al., 1996).
- The corresponding increase in ALP activity confirmed that damage has been inflicted on the plasma membrane, which might have resulted in the compromise of its integrity.
CONCLUSIONS

- The result of this study showed that the activity of majority of the enzyme assayed (ALP, LDH, and ALT) were decreased.

- This reflects that, there may be some potentially toxic compounds present in the extract that are deleterious to the normal functions of the small intestine.

- Hence, the extract may not be safe for medicinal purposes attributed to it, unless when properly processed.
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