

Effect Of *Alocasia Macrorrhiza* Extract On Hepatorenal Functions In Mice.

Eman Gamal El-Deen Helal, Samia M. Abd El-Wahab, Abdel-Sattar M. Metwally*,
Abdel-Mawgoud Asran**, Helmy A. Zedan**
and Mona Abdel-Hameed Ali**

Zoology Department, Faculty of Science, Al-Azhar University for Girls,

* Agriculture Zoology Department, Faculty of Agriculture, Al-Azhar University for Boys and

**Plant Protection Research Institute, Agricultural Research Center

Abstract

Background: *Alocasia macrorrhiza* (L) Schott and Endl is an ornamental perennial herbaceous plant which grows in coastal wetlands and valleys. Its common English name is Giant Elephant's Ear. The study planned to follow up the effect of the plant extract of *Alocasia macrorrhiza* on hepatorenal functions in mice following treated and recovery periods.

Material and methods: Animals were divided into two major groups, a control and an experimental group. Animals of the experimental group received *Alocasia* extract orally day by day in a dose of 144.6mg / kg /day for 20 days. Animals were sacrificed after treated and recovery periods of 10 and 20 days respectively, blood samples were collected for hematological tests and biochemical analysis. Liver and kidney specimens were obtained and fixed in 10% formol saline for histological and histochemical study.

Results: RBCs, Hb were significantly decreased after treated period. Total protein, albumin and globulin were significantly decreased, while, AST, ALT, GGT, LDH, urea, creatinine, total lipid and cholesterol were significantly increased after treated and recovery period of 10 days. Histological changes in treated sections of the liver showed evidence of cellular degeneration and necrosis and in Kidney sections, tubular necrosis, glomerular shrinkage and atrophied glomerular tuft of capillaries were prominent. Mallory stained sections in liver showed increased collagen fibers around congested central veins, blood sinusoids and portal areas. While in kidney sections, the extract could not induce any change in the collagen fibers in the connective tissue. The changes which were observed after treatment disappeared after a recovery period of 20 days. However, the vascular congestion persisted. Histochemical studies revealed a significant decrease in PAS positive material in kidney after treated and a recovery period of 10 days. However DNA content showed non significant difference in all the experimental periods.

Conclusion: The high LD₅₀ of the reversible action of the plant need more studies in different suitable doses before recommendation to use it safety as medicinal plant.

Keywords: *Alocasia macrorrhiza*, Araceae, Medicinal plants, liver, Kidney, Mice, Histology, physiology.

Introduction

Recently, it was found that plants are used for treating various diseases in humans and animals (Botha and Penrith 2008). The interrelationship of pharmacology and toxicology is important as therapeutic efficacy occurs at a lower dose, where overdosing can induce poisoning. However, poisonous plants may contain active compounds with biological activities (McGaw and Eloff, 2005). When ingested, these compounds may have a local effect within the gut of the organism or they may be absorbed into the blood stream to produce systemic effects. These actions may be useful, toxic or indifferent to the organism (Amole and Izegebu, 2005).

Members of the family Araceae, such as *Alocasia macrorrhiza*, *Dieffenbachia*, *Philodendron* spp., *Monstera deliciosa* and *Zantedeschia aethiopica* may cause severe stomatitis. These plants are grown for their beautiful foliage, sometimes as house plants, and contain insoluble calcium oxalate crystals (needle-sharp raphides), which are packed in specialized ampoule-shaped ejector cells, each with an operculum, called idioblasts. On pressure such as crushing of the stem when chewed the needle-like crystals are