

Neutralization of *Bitis arietans* venom-induced pathophysiological disorder, biological activities and genetic alterations by *Moringa oleifera* leaves

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Abstract

Bitis arietans venom (BAV) is known to cause various pathophysiological disorders by altering the cellular inclusions and enzymatic activities of different organs. *Moringa oleifera* leaf has been reportedly used for treatment of snake envenoming but there is no information on its neutralizing potentials against *Bitis arietans* venom. This study investigated the antivenin activity of ethanol crude extract of *M. oleifera* leaf on *B. arietans* envenomed rats and its inhibitory effects on some biological activities of the venom. The lethal dose (LD₅₀) of BAV was estimated at 1.5 mg/kg⁻¹. BAV induced various toxic effects in the *in vivo* study however, treatment with *M. oleifera* leaf extract (MOLE) ameliorated BAV-induced hypernatraemia and hypercalcemia. Acute anemia observed in untreated envenomed rats was reversed after treatment with various concentrations of MOLE with a significant ($p < 0.05$) dose dependent increase in hematological indices. Liver damage in untreated envenomed rats as indicated by higher concentration of serum liver enzymes and higher concentration of antioxidant enzymes were significantly ($p < 0.05$) decreased in MOLE treated rats. Also, BAV exhibited hemorrhagic, hemolytic and coagulating activities which were inhibited in a dose dependent manner by MOLE. A mild DNA fragmentation noticed in tissues of the heart of untreated envenomed rats was ameliorated in the MOLE treated rats. Results obtained in this study indicated that *M. oleifera* leaf have antivenin activity against *B. arietans* venom induced toxicities and underscores its use in folk medicine for the treatment of snake bites.

Keywords:

Snake bite antivenin *Moringa oleifera* Albino Wistar rats DNA fragmentation *Bitis arietans*