Protective effects of *Mucuna pruriens* seed extract pretreatment against cardiovascular and respiratory depressant effects of *Calloselasma rhodostoma* (Malayan pit viper) venom in rats

**Fung, S.Y.**, Tan, N.H. and Sim, S.M.

Department of Molecular Medicine and Department of Pharmacology, UMBIO, Faculty of Medicine, University of Malaya, 50602 Kuala Lumpur, Malaysia

Corresponding author email: tanngethong@yahoo.com.sg

Received 30 November 2009; received in revised form 31 May 2010; accepted 5 June 2010

**Abstract.** The protective effects of *Mucuna pruriens* seed extract (MPE) against the cardio-respiratory depressant and neuromuscular paralytic effects induced by injection of *Calloselasma rhodostoma* (Malayan pit viper) venom in anaesthetized rats were investigated. While MPE pretreatment did not reverse the inhibitory effect of the venom on the gastrocnemius muscle excitability, it significantly attenuated the venom-induced cardio-respiratory depressant effects \( p < 0.05 \). The protection effects may have an immunological mechanism, as indicated by the presence of several proteins in the venom that are immunoreactive against anti-MPE. However, we cannot rule out the possibility that the pretreatment may exert a direct, non-immunological protective action against the venom.

**INTRODUCTION**

*Calloselasma rhodostoma* (Malayan pit viper) is a medically important snake indigenous to Malaysia. The major toxins of the pit viper venom are thrombin-like enzymes, platelet-aggregation inducers and inhibitors; as well as hemorrhagic proteases (Tan, 1991). In recent years, there has been a growing interest in alternative therapies and the therapeutic use of natural products, especially those derived from plants. In almost any part of the world, where venomous snakes occur, numerous plant species are used as folk medicine to treat snake bite (Mors, 1991; Martz, 1992; Houghton & Osibogun, 1993). Mors (1991) stated that 578 species of higher plants from 94 families have been cited in the literature as being active against snake bite.

Velvet beans (*Mucuna pruriens*; also known as Cowhage seed) are found in Asia, America and Africa. The plant is widely used as traditional medicine (Sathiyarayanan & Arulmozhi, 2007). Acute and subacute toxicity studies on a polyherbal formulation that include *M. pruriens* suggested that the plant is safe for treatment purpose (Chandra et al., 2007), though it has been reported that consumption of the unprocessed raw seed is often accompanied by toxic symptoms (Sathiyarayanan & Arulmozhi, 2007). The beans have been prescribed by traditional practitioners in Nigeria as an oral prophylactic for snakebites. The protective effect of the aqueous *M. pruriens* seed extract (MPE) has been demonstrated in mice against the lethal effect of venoms from *Echis carinatus* (saw-scaled viper) (Aguiyi et al., 1999, Guerranti et al., 2002),