

Protective Effect of Rosemary Extract against Toxicity Induced by Egyptian Naja haje Venom

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Abstract : Background: Egyptian Cobra; Naja haje (Elapidae) is one of most common snakes, widely distributed in Egypt and its envenomation causes multi-organ failure leading to rapid death. Thus, Different medicinal plants showed a protective effect against venom toxicity and may complement the conventional antivenom therapy. Aim: The present study was designed to assess both the antioxidant capacity of methanolic extract of rosemary leaves and evaluate the neutralizing ability of the extract against hepatotoxicity induced by Naja haje venom. Methods: The total phenolic and flavonoid contents and the antioxidant capacity of the methanolic rosemary extract were estimated by DPPH and ABTS Scavenging methods. In addition, the rosemary extract were assessed for anti-venom properties under in vitro and in vivo standard assays. Results: The rosemary extract had high total phenolic and flavonoid content as 12 ± 2 g of gallic acid equivalent per 100 gram of dry weight (g GAE/100g dw) and 5.5 ± 0.8 g of catechin equivalent per 100 grams of dry weight (g CE/100g dw), respectively. In addition, the rosemary extract showed high antioxidant capacity. Furthermore, The rosemary extract were inhibited in vitro the enzymatic activities of phospholipase A₂, L-amino acid oxidase, and hyaluronidase of the venom in a dose-dependent manner. Moreover, indirect hemolytic activity, hepatotoxicity induced by venom were completely neutralized as shown by histological studies. Conclusion: The phenolic compounds of rosemary extract with potential antioxidant activity may be considered as a promising candidate for future therapeutics in snakebite therapy.

Keywords : antioxidant activity, neutralization, phospholipase A₂ enzyme, snake venom

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