

An electrophoretic comparison of the venoms of a colubrid and various viperid snakes from Turkey and Cyprus, with some taxonomic and phylogenetic implications

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Abstract

Venom extracts obtained from a colubrid snake [*Malpolon monspessulanus* (Hermann)] and eight viperids [*Vipera xanthina* (Gray), *Vipera ammodytes* (Linnaeus), *Vipera kaznakovi* (Nikolsky), *Vipera eriwanensis* (Bonaparte), *Vipera wagneri* Nilson & André, *Vipera barani* Böhme & Joger, *Macrovipera lebetina lebetina* (Linnaeus), *Macrovipera lebetina obtusa* Dwigubsky] distributed in Turkey and Cyprus were compared using polyacrylamide gel disc electrophoresis and densitometry analysis methods. The electrophoretic patterns of the examined snakes were demonstrated. The obtained electropherograms of the examined venom protein samples showed important qualitative differences between the colubrid snake, *Malpolon monspessulanus* and the viperid snakes; in the colubrid sample the total protein fraction number was 8, while in viperid samples they number between 10 and 14, indicating the venom complexity in viperids is higher than that of colubrid snakes. Electrophoretic data support the phylogenetic argument previously outlined of the family Viperidae. Moreover, in the light of the differences of the venom electrophoretic patterns, it is concluded that the southern Anatolian population of *Macrovipera lebetina* should not be identified as the nominate subspecies *M. l. lebetina*, which lives in Cyprus.

Key words: Colubrid and viperid snake venom, polyacrylamide gel disc electrophoresis, densitometry

Introduction

Some of the earliest studies concerning snake venoms were on the secretions of serous type Duvernoys gland in various colubrid species (Hageman 1961; Mebs 1968; Robertson & Delpierre 1969; McKinstry 1983, Kochva 1987). The polyphyletic family Colubridae contains approximately 700 species, which produce venom in a specialised cephalic and oral gland, a Duvernoys gland, located in the temporal region (Mackessy 2002). Although