

# NMR-Spectroscopic Screening of Crude Venom of *Mesobuthus Cyprius*

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**Abstract:** *Mesobuthus cyprius*, one of the two endemic scorpions in Cyprus, belongs in the family of Buthidae which is geographically distributed worldwide and is the largest of the scorpion families. Moreover, from a clinical perspective, *Buthidae* is the most important scorpion family as several members of this family are toxic to mammals and can be dangerous to humans. Even though *Mesobuthus Cyprius* was discovered in 2000 using molecular phylogenetics there are no other published data regarding the peptide and protein composition, the toxicity, or any other activity of the venom. It is impressive, that a broad variety of bioactive substances in scorpion venoms may be considered as a source for drug discovery and development. Direct NMR spectroscopic analysis of unpurified biological extracts is a powerful tool for the discovery of natural products especially in complex mixtures like venoms. It permits partial or complete structural characterization of its major components as well as of many minor components. Herein, we report the application of 1D and 2D NMR spectroscopy for the first time in the analysis of the *Mesobuthus Cyprius* venom and the identification of a wide range of biomolecules and peptides. Samples were dissolved in D<sub>2</sub>O and based on COSY, TOCSY, NOESY, HSQC and HMBC spectra, structures were proposed for the venom's major components as well as for many minor components. Final identification of individual compounds can be accomplished through synthesis of proposed structures and additional Liquid Chromatography - Mass Spectrometry Analysis.