Preliminary Transcriptome Analysis of the Spider *Phoneutria pertyi* Venom Glands and Comparison with the Transcriptome of the Spider *Phoneutria nigriventer*

Paiva A.L.B.¹, Machado, C.R.L.¹, Mudado, M. A.¹, Diniz, M.R.V.¹

¹ Diretoria de Pesquisa e Desenvolvimento, Fundação Ezequiel Dias, Minas Gerais, Brazil.

Species of the genus *Phoneutria* known as “armed spiders” are responsible for a large number of spider bites in Brazil. Until recently, all studies on the venom of the genus have been restricted to the species *P. nigriventer*. However, some recent proteomic studies revealed that other species venoms also contain a wide variety of proteins and peptides, including neurotoxins which act on the ion channels and chemical receptors of the neuro-muscular systems of insects and mammals. Thus, these venoms have emerged as invaluable tools for research and drug development. In order to find novel venom components with biological activity and to provide a database for comparative study with the previously described *P. nigriventer* venom gland transcriptome, we constructed a cDNA library from the species *Phoneutria pertyi* venom gland to generate Expressed Sequence Tags (ESTs) data. After editing, 710 good quality sequences were clustered in 295 unique sequences (106 contigs and 189 singlets). Of these, 197 (67%) had a high degree of homology to spiders toxins deposited in the Uniprot database which the most are *P.nigriventer* toxins isoforms. We observed that *P. pertyi* venom gland transcriptome were more abundant in insecticidal toxin sequences than *P. nigriventer* one. We also found sequences for putative toxins in *P. pertyi* transcriptome, indicating that they can be novel toxins. These results show that although these spiders’ venoms contain a similar range of toxins isoforms, the expression levels of each type of toxin are different and they also contain toxins with unique sequences, what can suggest adaptation to different environments.

Word Keys: *Phoneutria*, venom gland, neurotoxin, ESTs.

Supported by: FAPEMIG, CNPq – INCTTOX, FUNED.