Proteomic Analysis of *Melipona quadrifasciata* Brain under Two Distinct Operant Learning Conditions

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Comparative proteomics is a powerful approach for studying neural mechanisms in bees. Neuroproteomic analysis is being carried out with stingless bees (*Melipona quadrifasciata*) under operant conditioning in order to discriminate colors either with opaque stimulus or bright stimulus. The objective is to comparatively evaluate brain proteomes of such bees to find proteins putatively related to learning. In this work, brain extracts were analyzed by using two-dimensional gel electrophoresis (2DE) within pl range 4-7. One protein spot was detected as differentially expressed (up-regulated in trained bee with opaque stimulus) by computational gel image and statistical analysis. MS/MS analyses were performed using a MALDI-TOF/TOF mass spectrometer to indentify the protein as an isoform of arginine kinase (ArgK). ArgK can build both spatial and temporal energy buffering for delivering energy in sensory cells. 2DE gel image analysis of brain proteomes from bees trained under bright stimulus did not show the presence of that specific ArgK isoform, but there were some other possible differentially expressed proteins. The characterization of ArgK isoforms and those other proteins related to learning in *Melipona quadrifasciata* are now under way.

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