

Characterization by RNAi silencing of FMRF-related peptides and their receptors

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Five neuropeptide genes are classified in the FMRF-related (FaRP) group: the *Fmrf*, *dromyosuppressin* (*Dms*), *drosulfakinin* (*Dsk*), *neuropeptide F* (*npf*) and *short neuropeptide F* (*sNPF*). In order to compare their effects on the locomotor activity of *Drosophila* adults, we made RNAi knockdown of the peptides and their specific receptor genes. In addition, we constructed Gal4 drivers with three distinct parts of the *Fmrf* gene's 5' regulatory sequence, and used them to ablate FMRF-positive neurons through *rpr*-induced apoptosis. We examined the startle-induced changes in the flies' locomotor activity by measuring the mean velocity of movement (MVM). In general, the flies' locomotor activity was decreased by the RNAi knockdown induced in the CNS by the *elav-Gal4* driver. The highest effects were observed when the *DmsR-1* and *DmsR-2* receptors or the *Dsk* and *DskR-2* genes were silenced together. Male and female flies were not different in this respect. In the cell-ablation experiment, significant effects were observed in females when the *UAS-rpr* transgene was activated by the *RS8-Gal4* or the *RS17-Gal4* drivers, while the *RS11-Gal4* was ineffective. Interestingly, the *RS8*-induced neural ablation had no effect on the flies' negative geotaxis. These results confirm that the FaRP peptides and receptors are important regulators of the adult locomotor activity. In addition, with the new drivers we observed ectopic expression of the *Fmrf* gene in the imaginal discs.