# Molecular Characterization of FMRFamide-like Peptides in *Meloidogyne graminicola* and Analysis of their Knockdown Effect on Nematode Infectivity

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*Abstract—Root knot nematode, M. graminicola primarily affects rice, an important staple cereal worldwide and forms a characteristic swollen and hook shaped structure. It seriously impairs the growth and yield of rice, by reducing tillering and inefficient filling of kernels. There are various neuropeptides controlling the different neuromuscular activities of the nematode. Disruption of neuropeptide signalling can lead to attenuated nematode behaviour and thus interfere with infection ability which is offers an attractive alternative. In this direction, the present study was aimed at mining of putative FMRFamide-like peptides (FLPs) from the transcriptomic dataset of M. graminicola followed by characterization of those FLPs through PCR, qRT-PCR and Southern hybridization. In addition to earlier report of flp-1 and flp-12 from our laboratory, we have characterized seven more FLPs (flp-3, flp-6, flp-7, flp-11, flp-14, flp-16 and flp-18) from M. graminicola; in situ localization revealed the expression of flp-1 and flp-7 in neurons posterior to circumpharyngeal nerve ring. Here, we also report the putative deorphanisation of a neuropeptide receptor of M. graminicola (flp-18 GPCR).  In vitro silencing of nine flp genes and flp-18 GPCR in M. graminicola J2 and their subsequent infection in rice and wheat roots demonstrated the reduced penetration ability of FLP silenced worms which underscore the potential of FLPergic system as a broad-spectrum target to manage the root-knot nematode problem in rice-wheat cropping system.*