

Lucilia Sericata Netrin-A: Secreted by Salivary Gland Larvae as a Potential to Neuroregeneration

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Abstract : Netrin-A, a protein identified for conducting commissural axons, has a similar role in angiogenesis. In addition, studies have shown that one of the netrin-A receptors is expressed in the growing cells of small capillaries. It will be interesting to study this new group of molecules because their role in wound healing will become clearer in the future due to angiogenesis. The greenbottle blowfly *Luciliasericata* (*L. sericata*) larvae are increasingly used in maggot therapy of chronic wounds. This aim of this was the identification of molecular features of Netrin-A in *L. sericata* larvae. Larvae were reared under standard maggotarium conditions. The nucleic acid sequence of *L. sericata* Netrin-A (LSN-A) was then identified using Rapid Amplification of cDNA Ends (RACE) and Rapid Amplification of Genomic Ends (RAGE). Parts of the Netrin-A gene, including the middle, 3', and 5'-ends were identified, TA cloned in pTG19 plasmid, and transferred into DH5 α *Escherichia coli*. Each part was sequenced and assembled using SeqMan software. This gene structure was further subjected to in silico analysis. The DNA of LSN-A was identified to be 2407 bp, while its mRNA sequence was recognized as 2115 bp by Oligo0.7 software. It translated the Netrin-A protein with 704 amino acid residues. Its molecular weight is estimated to be 78.6 kDa. The 3-D structure of Netrin-A drawn by SWISS-MODEL revealed its similarity to the Netrin-1 of humans with 66.8% identity. The LSN-A protein conduces to repair the myelin membrane in neuronal cells. Ultimately, it can be an effective candidate in neural regeneration and wound healing. Furthermore, our next attempt is to deplete recombinant proteins for use in medical sciences.

Keywords : maggot therapy, netrin-A, RACE, RAGE, *lucilia sericata*

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