

## **Transcriptomic Response of *Caenorhabditis Elegans* Expressing Human $A\beta_{42}$ Gene Treated with Salvianolic Acid A**

### **ABSTRACT**

Alzheimer's disease is associated with the deposition of  $\beta$ -amyloid peptide in the brain. A genome-wide transcriptomic study was performed to determine the response of transgenic *Caenorhabditis elegans* expressing full-length human  $A\beta_{42}$  gene towards salvianolic acid A (Sal A). The genes associated with antioxidant response, *gst-4*, *gst-10*, *spr-1* and *trxr-2*, were upregulated.  $A\beta_{42}$  caused oxidative stress and the antioxidant response genes possibly provide some sort of protection to the nematode. *trxr-2* gene product was also associated with the defence system and probably has a role in the lifespan of the nematode. Other genes involved in DNA replication, reproduction, immune response and antimicrobial activities were also found to be upregulated. Treatment of Sal A also increased the rate of reproduction in the nematode, and elevated its immunological protection system towards microorganisms. On the other hand, the genes responsible for ligand-gated cation channel, embryonic and postembryonic development, locomotion and neuromodulation of chemosensory neurons were found to be downregulated. As an effector, Sal A might conceivably reduce the movement of the nematode by interfering with neuronal transmission, and embryonic and postembryonic development.