

# Neuroprotective Effect of *Centella asiatica* Ethanolic Extract on Toluene-Led Neurodegeneration in *Caenorhabditis elegans*

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Neurodegenerative disorder is a wide range of conditions that results from progressive function loss or death of the nerve cells in the nervous system. Many studies confirmed that toluene, a volatile organic compound commonly used as a solvent for polymers and paint, can induce neurodegeneration which resulting in locomotion defects. We aim to study the neuroprotective effect of a local herb, *Centella asiatica* (CA), that is widely known for its medical uses. *Caenorhabditis elegans* (*C. elegans*) is chosen to be an animal model because of its simplicity and universal uses in drug testing and neurobehavior research. *C. elegans* are fed with different concentrations of CA ethanolic extract from L2 stage, then the young adult nematodes are exposed to 666 ppm toluene in the air for 2 minutes. The 1-minute videos of *C. elegans* are captured before further processing with Fiji to obtain the *C. elegans* average speed. Lastly, the data is analyzed using one-way ANOVA and Tukey HSD post hoc test. Here we show that CA ethanolic extract at the dosage of 1.00 mg/ml CA extract in 2% DMSO in distilled water has a neuroprotective effect which is interpreted from a more normal average speed of *C. elegans* after toluene exposure compared to the control set which has significantly decreased average speed. While lower concentrations of 0.01 and 0.10 mg/ml did not produce a statistically significant result. Therefore, our preliminary study here suggests that CA ethanolic extract has a neuroprotective effect on toluene-induced neurodegeneration.

**Awards Won:**

