The Effect of Saturated Lipid on Neurogenesis Following Acute Brain Injury

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Acute brain injury may lead to memory loss and cognitive dysfunction. There are many factors that could cause these injuries, including mechanical trauma and strokes. For the successful restoration of memory, the injury needs to heal for the re-establishment of neuronal networks. Initiation of new neuronal growth (neurogenesis) at the site of injury in an adult human brain is still not well-defined; however, neurogenesis in an invertebrate's brain is a common event and is well documented. Healing of the injured brain depends on the metabolic status of an individual such as age, hormonal status, obesity, and genetics. In my previous study, I investigated the effect of saturated lipid on the restoration of memory following an acute brain injury. I used earthworms (Lumbricus terrestris) as my research model and observed that saturated lipid impaired the restoration of memory following an acute brain injury. In my current study, I am investigating the underlying mechanisms of whether new neurons develop and migrate at the site of injury. Using immunofluorescence, I targeted 2 proteins; Beta-3-Tubulin and Nestin, which are considered marker proteins for new neuron developments. I observed that the expression of Beta-3-Tubulin and Nestin declined significantly, indicating the impairment of new neuron development in the brains of those earthworms that were treated with saturated lipid following the acute brain injury. The findings can be implicated in adult neurogenesis in humans suffering from stroke, obesity, and high body fat index following acute brain injuries.

Awards Won:
Third Award of $1,000