

Presentation Abstract Submission

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Research Title	Semecarpus Anacardium Improves Memory Through Inhibiting Acetylcholinesterase and Reducing Glutamate Induced Calcium Influx

Abstract:

ABSTARCT Semecarpus anacardium (SA) has several medicinal properties including enhancing learning and memory, yet the mechanism underlying its neuroprotective effects have not been explored scientifically. We investigated the neuroprotective effects of SA against glutamate induced cell death in the adrenal pheochromocytoma cell line of rats (PC12 cells). Treatment with SA not only improved spatial memory as indicated by spontaneous alteration tests but also enhanced declarative memory as suggested by delayed matching and non-matching to sample tasks tests conducted in an open field apparatus. Further studies indicate that SA offers neuroprotection by safeguarding hippocampus by maintaining its proper structure and improving cell viability when subjected to glutamate induced damage. Results obtained from calcium imaging show that SA may offer neuroprotection under glutamate insult by decreasing excessive calcium influx which is the primary mechanism of glutamate induced cell injury. SA potently inhibited acetylcholinesterase enzyme in a dose-dependent manner providing further mechanistic insight into memory enhancing properties of SA. These results provide evidence for the traditional use of SA in Arab, African and Indian medicine for memory enhancing purposes and show that multiple pathways such as enhanced cell viability, reduced calcium entry, and inhibition of acetylcholinesterase enzyme are responsible for its observed effects on learning and memory. Key words: Semecarpus anacardium, learning and memory, spatial memory, declarative memory, cell viability, calcium influx, acetylcholinesterase