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## **TITLE: Therapeutic Investigations of Beta-Carotene in Diabetic Vascular Dementia in Rat**

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### **ABSTRACT (upto 300 words)**

Vascular dementia (VaD) is a major factor for the progress of stroke and other memory disorders. It is the second leading cause of death. The burden of VaD is higher in the aged population (>65 years). The progression of VaD occurs with lifestyle modifications i.e., fast food, smoking, and alcohol. The medicines for the treatment of VaD are limited. The present research designed to investigate the potential role of palm oil mill effluent derived beta-carotene (BC) in experimental model of diabetic VaD. The diabetic VaD was induced by administration of nicotinamide (NA, 50 mg/kg; *i.p.*) followed by streptozotocin (STZ, 50 mg/kg; *i.p.*). The test compound i.e., BC (50 and 100 mg/kg) and reference compound donepezil (1 mg/kg) were administered orally for 15 consecutive days. The changes of cognitive patterns *i.e.*, escape latency time (ELT) and times spent in target quadrant (TSTQ) were assessed by Morris water maze (MWM) test. Besides the changes of neurotransmitter *i.e.*, acetylcholinesterase (AChE) were estimated in brain (hippocampus, cerebellum, entorhinal cortex, amygdala and septum) samples.

The administration of STZ caused the significant changes of cognitive functions (increased ELT and decreased TSTQ) as indicated in the development of VaD when compared to normal group. The treatment of BC was ameliorated the cognitive dysfunctions against the STZ associated endocrine and neurotransmitter (elevated AChE) changes. The effects were similar to donepezil treatment group. Hence, it proved that, the administration of BC possess the potential therapeutic effects in the management of diabetic VaD due to its potential anti-cholinergic effects.

### **BIOGRAPHY (upto 200 words)**

Arunachalam Muthuraman has completed his PhD at the age of 29 years from Punjabi University, India. He is the Associate Professor, Department of Pharmacology, AIMST University, Malaysia. He has over 70 publications that have been cited over 1853 times, and his publication h-index is 24. He has been serving as a reviewer and editorial board member of several reputed journals. This research work is supported by the ministry of education (MOE) through FRGS Research Grant (FRGS/1/2020/STG01/AIMST/01/1).

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