

P.09

**Green tea ameliorates learning and memory deficits in ischemic rats via the modulation of oxidative stress and neuroinflammation**

Kuo-Jen Wu<sup>1</sup>, Yuh-Fung Chen<sup>2,3</sup>

<sup>1</sup> School of Chinese Pharmaceutical Sciences and Chinese Medicine Resources, College of Pharmacy,

<sup>2</sup> Department of Pharmacology, College of Medicine, China Medical University, and

<sup>3</sup> Department of Pharmacy, China Medical University Hospital, Taichung, Taiwan,

**Abstract**

Ischemic stroke results in brain damage and behavioral deficits including memory impairment. Protective effects of green tea extract (GTex) and its major functional polyphenol (-)-Epigallocatechin gallate (EGCG) on memory were examined in cerebral ischemic rats. GTex, EGCG and pentoxifylline (PTX) significantly improved ischemic-induced memory impairment in a Morris water maze test. Malondialdehyde (MDA) levels, glutathione (GSH), and superoxide dismutase (SOD) activity in the cerebral cortex and hippocampus were increased by long term treatment with GTex and EGCG. Both compounds were also associated with reduced cerebral infarction breakdown of MDA and GSH in the hippocampus. In *in vitro* experiments, EGCG had anti-inflammatory effects in BV-2 microglia cells. EGCG inhibited lipopolysaccharide (LPS) induced nitric oxide production and reduced cyclooxygenase-2 and inducible nitric oxide synthase expression in BV-2 cells. GTex and EGCG improved learning and memory deficits in a cerebral ischemia animal model and such protection may be due to the inhibition of oxidative stress and neuroinflammation.