# ABSTRACT

INHIBITION OF NEURONAL CELL DEATH USING Camillia sinensis WITH ITS ACTIVE COMPOUND EGCG IN Rattus norvegicus ACUTE ISCHEMIC STROKE MODEL

**Background:** Stroke is the most prevalent neurological disorders in the world. During ischemic stroke there is increasing oxidative stres that will cause cell death through apoptosis and necroptosis pathways.

**Methods:** We perform in vivo study using male Rattus Novergicus within 5 groups, control MCAO, EGCG 10 mg/kgBB, EGCG 20 mg/kgBB, EGCG 30 mg/kgBB, and extract green tea 30 mg/kgBB. Before performing MCAO models all study subject examine for Ladder Rung, and Y-Maze. We perform MCAO model using clamping carotid artery for 180 minutes. All groups are treated for 7 days and at day $7^{th}$ we perform ladder rung and Y maze examination before research subject is sacrifice and examine HMGB1 using ELISA methods, and IHC for HO-1, TNFR1, RIP3, BCL-2 and Caspase-3.

**Result:** There is significant different in all intervention group compared to control group on HO-1 ($p<0,05$). There is no significant different in all groups compared to control group in HMGB1. There is also significant different in all intervention group started at EGCG 20 mg/kgBW compared to control group on TNFR1 ($p<0,05$), significant different for RIP3 started at EGCG 20 mg/kgBW and extract green tea group ($p<0,05$), BCL-2 for all intervention group ($p<0,05$), Caspase-3 at EGCG 30mg/kgBW ($p=0,004$) and green tea extract group ($p=0,019$). There are no significant different on ladder rung at days $7^{th}$ for all groups. There is also significant different in Y-Maze Score at green tea extract groups ($p=0,048$). There is significant correlation between HO-1 and BCL-2 ($r=-0,655$; $p=0,000$), BCL-2 and Caspase-3 ($r=-0,5$ ; $p=0,000$), Caspase-3 and Y-Maze ($r=0,332$; $p=0,001$), TNFR1 and RIP3 ($r = 0,551$; $p=0,000$) and we didn't find correlation between HMGB1 and TNFR1 ($r=0,029$; $p=0,838$), RIP3 and Y-Maze ($r=0,18$; $p=0,167$).
**Conclusion:** Green tea with its active coumpound EGCG can inhibit neuronal cell death through apoptosis and necroptosis pathways in MCAO models.

Key words: MCAO, *Camelia sinensis*, extract green tea, EGCG, HO-1, TNFR1, RIP3, BCL-2, *Caspase-3, Ladder Rung, Y-Maze*