**Methods:** Gabapentin 10, 30mg/kg; diclofenac 5mg/kg (reference drug), vehicle (saline) were injected intraperitoneally before 100µl of 1% carrageenan administration into the right hind paws of the rats. Paw thickness was measured by a gauge calipers (Vernier Calipers) before (0th hour) and in every hour during 6 hours after induction of inflammation. Paw thickness of treated groups were compared with control group with One-way ANOVA. Also paw thickness in 0th and 6th hours were compared within each group with two-way ANOVA. Gabapentin was administered orally for 10 days to evaluate gastric side effect. At the end of 10 day treatment, rats were sacrificed, gastric tissues were removed out, mucus secretion was determined spectrophotometrically.

**Results:** There was no significant difference between 0th and 6th hours in paw thickness of all groups, except carrageenan group. Carrageenan significantly increased paw thickness in 6th hour compared to 0th hour. All doses of gabapentin and diclofenac significantly reduced paw thickness in 6th hour compared to carrageenan group. Gabapentin 10 and 30mg/kg similar to diclofenac significantly reduced mucus secretion compared to control.

**Conclusion:** We suggest that gabapentin as an antinociceptive effective agent may also possess antiinflammatory features. Both doses of gabapentin showed antiinflammatory effect and reduced gastric mucus secretion similar to diclofenac.

**Key words:** gabapentin, carrageenan-induced paw edema, gastric mucus

**PT671**

The effects and mechanism of action of galangin on spatial memory in the Morris water maze test in rats

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**Abstract**

**Objectives:** Cholinergic system is one of the most important neurochemical systems which play role in spatial memory. Inhibition of acetylcholinesterase can mediate to improve cognitive functions via enhancing cholinergic transmission. It was shown that galangin, a flavonoid compound, has acetylcholinesterase enzyme inhibitory activity. The aim of this study was to investigate the effects of acute galangin administration on scopolamine-induced spatial memory impairments in rats.

**Methods:** The rats were trained in the Morris water maze over five daily acquisition sessions. Twenty-four hours after the last acquisition session, a probe trial was used to evaluate the rats’ spatial retention of the location of the hidden platform. During probe trial, the platform was removed from the maze, galangin 50, 100mg/kg, donepezil 1 mg/kg (reference drug), vehicle were administered 30 minutes before the injections of scopolamine, a muscarinic cholinergic receptor antagonist. Distance to zone (platform) and time spent in escape platform quadrant were recorded and analyzed by using the Ethovision XT version 9.0 (Noldus, Wageningen, Netherlands). Results were statistically analyzed with one-way ANOVA.

**Results:** Scopolamine decreased the time spent in the escape platform quadrant and increased the distance to zone (platform) during the probe trial compared to the control group ($p<0.05$). Galangin 50, 100mg/kg and donepezil significantly increased the time spent in the escape platform quadrant and reduced the distance to zone (platform) in scopolamine treated rats ($p<0.05$).

**Conclusion:** Both doses of galangin reversed the effect of scopolamine. We suggest that galangin may improve memory via acting on muscarinic cholinergic receptors.

This study was supported by ‘Scientific Research Projects’ of Eskisehir Osmangazi University.

**Key words:** galangin, spatial memory, morris water maze