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Biochemical observations showed that the oxidative stress were significantly improved in seizure groups under treatment with SA.

Conclusion: Based on the results obtained in this study Syringic acid can be effective in controlling Pentylentetrazol-induced seizures. The beneficial effects of SA may be due to its antioxidant properties.

Keywords: Syringic acid, Seizure, Pentylentetrazol, Oxidative stress, Pain, Rat

#### **P-424**

### **Portulaca oleracea, relieves neuropathic pain following chronic constriction sciatic nerve injury in rat: anti-inflammatory and antioxidant activity**

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Background and Objective: Neuropathic pain responds poorly to drug treatments. The present study investigated the therapeutic effect of *Portulaca oleracea*, in chronic constriction injury (CCI)-induced neuropathic pain in rats.

Materials and Methods: Neuropathic pain was performed by putting four loose ligatures around the sciatic nerve. Acetone drop, von Frey hair, radiant heat tests were done to evaluate cold allodynia, mechanical allodynia and heat hyperalgesia, respectively. The levels of Interleukin-1 $\beta$  (IL1 $\beta$ ) and Tumor necrosis factor-alpha (TNF $\alpha$ ) as inflammatory markers as well as oxidative stress markers (Malondialdehyde, total thiol content) were measured in the in the L4-L6 segments of the spinal cord.

Results: CCI resulted in the development of heat hyperalgesia, mechanical allodynia and cold allodynia accompanied by an increase in the contents of TNF- $\alpha$ , IL1 $\beta$ , malondialdehyde, with a reduction in total thiol content. Administration of *Portulaca oleracea* (100 and 200 mg/kg intraperitoneal) for 14 days in CCI rats significantly alleviated pain-related behaviors, oxidative damage and inflammatory cytokines in a dose-dependent manner.

Conclusion: It is suggested that antinociceptive effects of *Portulaca oleracea* might be due to antioxidant and anti-inflammatory properties.

Keywords: Antinociceptive effect, *Portulaca oleracea*, Neuropathic pain, Hyperalgesia.

#### **P-425**

### **Menaquinone-4 effects on working memory impairment and anxiety behavior after transient cerebral ischemia/ reperfusion in male wistar rat**

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Background and Objective: Working memory impairment and anxiety behavior could be induced by transient global cerebral ischemia/reperfusion (TGCI) as one model of brain stroke. Menaquinone 4 (MK-4) is an antioxidant and anti-inflammation known as vitamin K2. This investigation questioned the effects of MK-4 on the mentioned cognitive impairments following TGCI.

Materials and Methods:

28 male wistar rats were randomly selected and divided in 4 groups: sham-control,

TGCI, TGCI+DMSO (1% v/v), TGCI+ MK-4. Immediately and also 2 hours after reperfusion, 200mg/kg MK-4 were injected intraperitoneally. 7 days later rats were examined using Y maze and also open field apparatus to evaluate working memory sufficiency and the level of anxiety behavior, respectively.

Results: TGCI could reduce spontaneous alternation compared with the sham-control group significantly ( $p < 0.01$ ). But MK-4 increase percentage of spontaneous alternation compare to TGCI and TGCI+ DMSO ( $p < 0.05$ ). Rats in TGCI + DMSO and TGCI groups spent significantly less time in the center zone of open field apparatus compared to sham-control group which can be interpreted as the elevation of anxiety behavior ( $p < 0.001$ ). But the time spent in the center zone was significantly increased in TGCI+MK-4 group compare with injured groups ( $p < 0.001$ ).

Conclusion: Results showed that MK-4 could improve working memory (short-term memory) and also reduced anxiety behavior after TGCI. Probably, antioxidant and anti-inflammatory aspects of MK-4 decrease oxidative stress and neuro-inflammation proceeding factors in the brain which needs more investigations.

Keywords: Transient Global cerebral ischemia/ reperfusion; Menaquinone-4; Y maze, Open field.

## P-426

### **The effect of safranal on prevention of learning and memory deficits following intracerebroventricular injection of colchicine in the rat**

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Background and Objective: Cognitive decline is associated with Alzheimer's disease that is considered a chronic and progressive syndrome that finally leads to irreversible loss of neurons. In this study, we assessed whether safranal has a beneficial effect on cognitive function following intracerebroventricular injection of colchicine in the rat.

Materials and Methods: 32 male rats were randomly divided into four groups as follows: Sham, lesion (receiving intracerebroventricular colchicine bilaterally at a dose of 15 microg), and two lesion groups receiving oral safranal at doses of 10 or 50 mg/kg in addition to colchicine. Finally, passive avoidance and Y-maze tests were used to assess learning and memory.

Results: The results showed that intracerebroventricular colchicine significantly reduces alternation and step-through latency in behavioral tests and treatment of lesion group with safranal at a dose of 50 mg/kg significantly improves these parameters.

Conclusion: Taken together, safranal could prevent learning and memory deficits following intracerebroventricular injection of colchicine in the rat.

Keywords: Safranal, Colchicine, Cognitive decline

## P-427

### **The effect of nobiletin on inflammatory response, oxidative stress, cholinesterase, and apoptosis in amyloid beta-induced model of Alzheimer's disease in the rat**

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Background and Objective: Alzheimer's disease (AD) is the most common cause of dementia. Nobiletin as a natural compound from citrus peels possesses anti-dementia activity. In addition, nobiletin could ameliorate oxidative stress and inflammation. Therefore, this study was conducted to assess the effect of nobiletin on hippocampal