Apigenin

Apigenin is a plant flavonoid proven with biological properties such as anti-inflammatory, antioxidant, and antimicrobial effects. Kuru Bektaşoğlu et al. aimed to examine the possible anti-inflammatory, antioxidant and neuroprotective effects of apigenin in the setting of the mild traumatic brain injury (TBI) model.

Wistar rats were randomly assigned to groups: control (n = 9), TBI (n = 9), TBI + vehicle (n = 8), and TBI + Apigenin (20 and 40 mg/kg, immediately after trauma; n = 6 and n = 7). TBI was performed by dropping a 300 g weight from a height of 1 meter onto the skull under anesthesia. Neurological examination and tail suspension test applied before and 24 hours after trauma, as well as Y-maze and object recognition tests, after that rats were decapitated. In brain tissue, luminol- and lucigenin-enhanced chemiluminescence levels and cytokine ELISA levels were measured. Histological damage was scored. Data was analyzed with one-way ANOVA.

Results: After TBI, luminol ($p < 0.001$) and lucigenin ($p < 0.001$) levels increased, and luminol and lucigenin levels decreased with apigenin treatments ($p < 0.01$-0.001). The tail suspension test score increased with trauma ($p < 0.01$). According to the pre-traumatic values, the number of entrances to the arms ($p < 0.01$) in the Y-maze decreased after trauma ($p < 0.01$). In the object recognition test, discrimination ($p < 0.05$) and recognition indexes ($p < 0.05$) decreased with trauma. There was no significant difference among trauma apigenin groups in behavioral tests. Interleukin (IL)-10 levels, one of the anti-inflammatory cytokines, decreased with trauma ($p < 0.05$), and increased with 20 and 40 mg apigenin treatment ($p < 0.001$ and $p < 0.01$, respectively). The histological damage score in cortex were decreased in apigenin 20 mg treatment group significantly ($p < 0.05$), the decrease observed in apigenin 40 mg group was not significant.

Conclusion: The results of this study revelead that apigenin 20 and 40 mg treatment may have neuroprotective effects in mild TBI via decreasing the the level of luminol and lucigenin and increasing the IL-10 levels. Additionally, apigenin 20 mg treatment ameliorated the trauma-induced cortical tissue damage [1)].

Pending classification

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