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## Seminar Abstracts

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## Activity and viability alteration of inflamed rat Astrocyte by Shikonin

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**Introduction:** Astrocytes occupy 50% of the brain volume and are most non neuronal cells within the central nervous system which present in a spectrum of brain disorders including brain injuries, ischemia, infections, autoimmune and neurodegenerative diseases. Oppose to this pathologic states they reflect by morphological and activity alternation, as they produce inflammatory cytokines, chemokines, ROS, NO and some times apoptosis. Shikonin is a naphthoquinone pigments extracted from *Lithospermum erythrorhizon* roots, well known for its anti tumor and anti-inflammatory effects in East Asia and employed as wound and infection healing material traditionally. This investigation is to study the anti-inflammatory or toxic effects of Shikonin at different concentrations around (10 to 100 $\mu$ M) on the cultured astrocytes.

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**Methods:** Astrocytes were treated one hour by different concentrations of shikonin and then affected by LPS. Viability test of MTT performed to reveal the cells which are alive. To assess inflammation progress, NO concentrations (test of Griess) were assessed after 24 and 48 hours. For astrocytes preparation, brains of two days rat infants were derived and then homogenized after meninges removal, homogenizes were cultured in DMEMF12+10%FBS medium. 10 days later astrocytes were harvested and re cultivated for more purifications to 95% (using Immunocytochemistry method).

**Results:** Shikonin concentration of (10, 20 and 30 $\mu$ M) had no significant anti-inflammatory and cell death effects but at (100 and 50 $\mu$ M) showed a significant cell death effect and an ability to reduce NO production by astrocytes ( $p < 0.0001$ ).

**Conclusion:** May be the reduction effect of NO production by mentioned concentration of shikonin is not due to an anti-inflammatory effect, instead, a cell death elevation, as the results are parallel with that. Alleviation of Bcl-2/Bax and/or ROS level elevation and apoptosis induction could be the probable hypothesis for the further investigations. Any attention to shikonin as a strategy for neurodegenerative treatment needs to consider the cytotoxic effects of shikonin in the mentioned concentrations.

**Key words:** Astrocytes, Inflammation, Shikonin, Neurodegenerative disease, NO, Apoptosis.