ASTROPROTECTIVE POTENTIAL OF EXTRACT FROM LIMONIUM GMELINII FOR STROKE THERAPY

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Background: It's known that proinflammatory cytokines, such asTNF-a, produced by injured neurons and infiltrated leukocytes, involved in every aspect of stroke. Cytokines promote activation of astroglia, induce oxidative stress thereby exacerbating brain tissue damage. There is a number of data indicating that polyphenols can provide protection against neurodegenerative changes. It has been reported previously, that reach with polyphenols extract of Limonium gmelinii exerts a wide range of therapeutic actions. Here, we aimed to study antioxidant and anti-inflammatory potential of L. gmelinii under exposure of TNF-a in vitro.

Materials and methods: In this study we used human primary astrocytes as following: control; cells incubated with TNF-a (0.1 ng/ml for 4 hr); cells pretreated with plant extract of L. gmelinii (30 ug/ml for 18 hr) followed by TNF-a exposure; cells incubated with plant extract only. To quantify the NADPH subunits colocalization, Erk 1/2 activation and ROS generation in astrocytes we applied quantitative fluorescence microscopy, confocal microscopy and western blotting.

Results: We observed that TNF-a promoted NADPH oxidase activation and consequent ROS generation and Erk 1/2 phosphorilation. In contrast, incubation of astrocytes with L. gmelinii extract suppressed TNF-a -induced colocalization between the p47-phox and gp91-phox subunits of NADPH oxidase, ROS production and phosphorylation of ERK1/2. At the same time, plant extract alone did not affect ROS formation and activity of the enzymes.

Conclusion: Our results demonstrate that extract from L. gmelinii possesses antioxidant and anti-inflammatory properties in vitro. Therefore, further studies are required to assess the effectiveness of the L. gmelinii extract in vivo.