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LEMNA MINOR L. EXTRACT AMELIORATE THE INTRACELLULAR C-REACTIVE PROTEIN AND ROS LEVELS IN PROGRESSIVE BLEOMYCIN-INDUCED PULMONARY FIBROSIS

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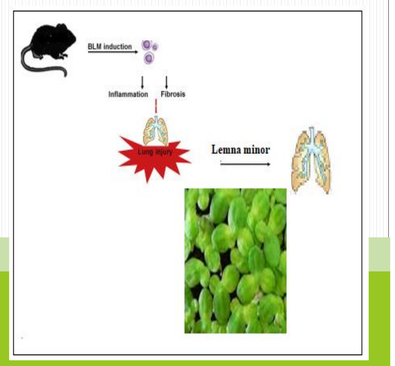


Introduction

The protective effect of Lemna minor L. (L. minor) roots extract to Bleomycın-ınduced progressive pulmonary fıbrosıs (BLM-PF) in mice was investigated. The LME (at 200 mg/mL concentration) antioxidant capacity were quantified by catalase-like activity (CAT), superoxide dismutase-like activity (SOD), total antioxidant capacity (TAC), DPPH absorption (98%) and DPPH radical-scavenging activity (97.3%), by using spectrophotometrical and EPR analysis.

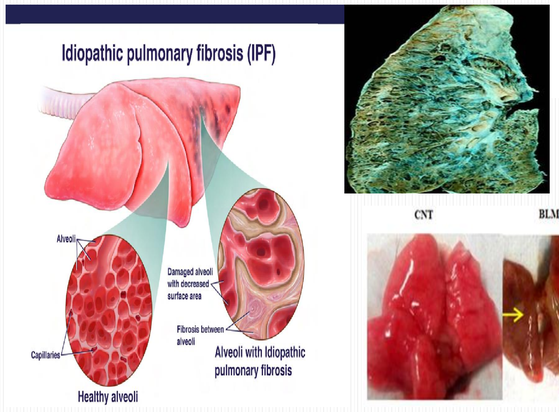
The progressive model (29 days) was used to investigate the BLM-PF; after 16 days of BLM-administration the PF were registered. Pulmonary toxicity was induced by intraperitoneal injection of animals once daily with BLM (0.069 U/mL; 0.29 U/kg bw; n=12 IRC/b mice) for 4 weeks. The L. minor was administered once a day, 4 weeks, 2h prior (200 mg/mL; 0.341 mg/kg/day; in n=6 IRC/b mice). The 4 groups were as follows: 1) control group- tap to water and normal food; 2) BLM- administration; 3) L. minor - administration; 4) L. minor protection + BLM- administration. The physiological status and behavior of animals were monitored daily and on the 30th day the mice were sacrificed (Nembutal 50 mg/kg i.p.). The lung samples were removed (pH=7.4, 4°C) and analyzed for biochemical parameters (SOD, CAT, GSH, GPX1, malondialdehyde (MDA)). C-reactive protein (CRP) was investigating by using Canine C-ELISA Kit- 557826-D. The ROS levels were measured by spin-adduct-reduction between phenyl N-tertiary-butyl nitrone (PBN in DMSO) and generated radicals, by EPR-EMXmicro, X-band spectrometer after double integration of the corresponding spectra. The results present BLM-oxidative toxicity and statistically significant decrease in SOD (p<0.03), CAT (p<0.05) GPX1(p<0.05) enzyme activity and two-fould increas in MDA (p<0.05), CRP (p<0.05) and ROS- levels (p=0.004), compared to group 1. In opposite in groups 3 and 4, the highly-toxic BLM-effects were significantly decreased for all parameters in pulmonary cells (p<0.05, t-test), relative to the controls. In conclusion, were indicated that L. minor treatment stimulates endogenous activity, and effectively reduced CRP-inflammation and scavenging ROS products. The positive correlation were registered between CRP and ROS (r=0.49, t-test). The L. minor ameliorates ROS-formations and neutralized the BLM-induced oxidative toxicity probably by suppressing the body/pulmonary cell residual inflammation processes.

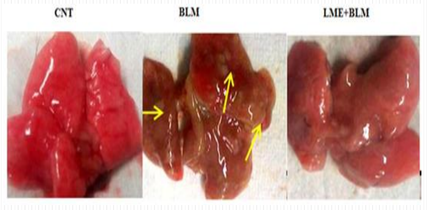
Keywords: L. minor, BLM, CRP, ROS

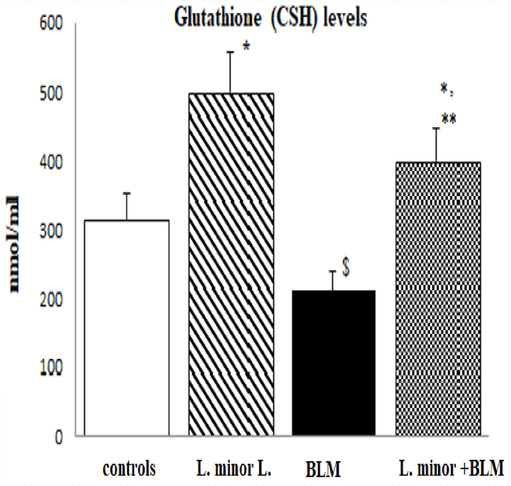
*proteins (up to 35%),
*vegetable fibers (up to 17%),
*fats (up to 5%),
*polysaccharides,
*flavonoids,
*amino acids,
*aliphatic acids,
*phenolic acids,
*triterpene compounds,
*vitamins,
*micro- and macro-elements
*In Bulgarian Lemna were identify the presence
of 32 biologically active substances
*Phytosterols (52.8 mg/kg), saturated hydrocarbons
(23.1 mg/kg), aldehydes and ketones (20.2 mg/kg),
fatty acids and their derivatives (11.1 mg/kg)

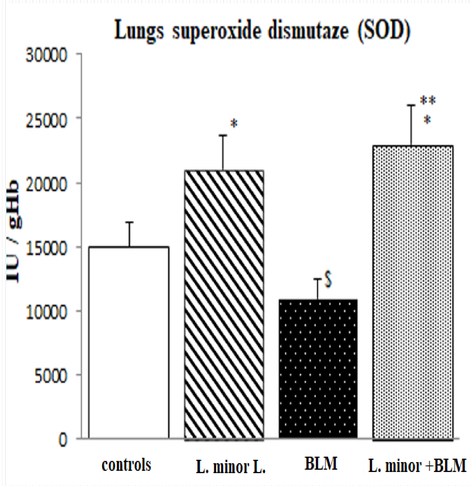
Lemna minor-Antioxidant activity, %
catalase-like activity (CAT, 73%),
superoxide dismutase-like activity (SOD, 85%),
total antioxidant capacity (TAC, 70.22%),
DPPH absorption (>98%)

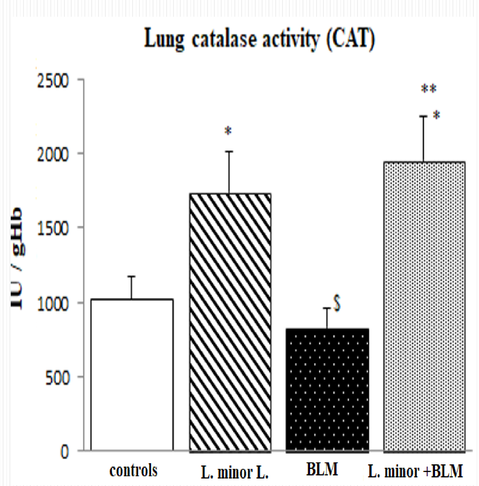
EPR analysis
DPPH radical-scavenging activity (97.3%)

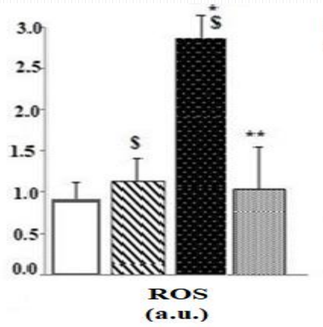


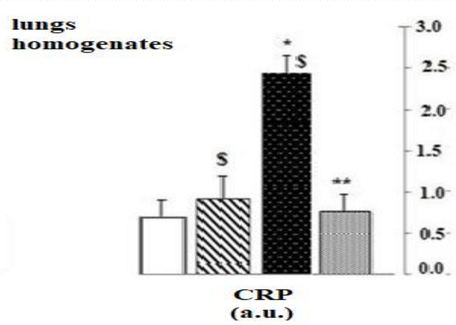












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