



## Abstract 2

### **Effect of resveratrol on the inflammatory status and oxidative stress in thymus gland and spleen of sulfoxaflor-treated rats**

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Resveratrol (Res), a polyphenolic compound that exerts mitigating consequences against various insults due to its antioxidant, anti-inflammatory, and immunomodulatory properties. Sulfoxaflor (SFX), a neonicotinoid insecticide, has been used worldwide and leading to deleterious effects on the environment and public health. The current study aimed to investigate the protective effect of Res on the inflammatory response and oxidative stress induced by SFX in the thymus and spleen of rats. Thirty six *Sprague Dawley* rats were divided randomly into six groups; control group, SFX treated groups (24.8 mg/kg or 79.4 mg/kg/day), Res (alone) treated group (20 mg/kg/day), Res + SFX treated groups (20 mg /kg Res + 24.8 mg/kg SFX or 20 mg/kg Res + 79.4 mg/kg SFX) orally for 28 days. Res treatment reversed the significantly elevated white blood cells' count and the reduced count of red blood corpuscles, platelets as well as hemoglobin content of SFX treated rats. Biochemically, Res administration inhibited the remarkably increased serum levels of the inflammatory cytokines as well as thymic and splenic levels of malondialdehyde following SFX treatment. Res treatment ameliorated the conspicuously reduced antioxidant enzymes' activities due to SFX supplementation. The immunomodulatory effect of Res treatment was detected by suppressing the up-regulation of the cluster of differentiation (CD)11b and CD3 gene expressions. Histopathological alterations attributed to SFX administration were ameliorated by Res treatment. In conclusion, Res can be used as a protective agent to counteract SFX toxic effects on lymphatic organs through alleviation of the antioxidant defense mechanism and modulation of the inflammatory response.

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