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Title: Protective effects of erythropoietin and N-acetyl cysteine on methotrexate-induced lung injury in rats

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Body: **Material and Methods:** Twenty-six female Sprague-Dawley rats were divided into 4 groups. Sham group was given subcutaneous (SC) injection of 0.3 ml of 0.9% NaCl (n= 5), MTX group was administered SC of 5 mg/kg methotrexate (MTX), EPO group was administered, SC of 5 mg/kg MTX and 2000 IU/kg EPO, and NAC group was given 5 mg/kg MTX and 200 mg/kg NAC once daily for 4 consecutive days. At the fifth day, the right lungs were extracted. Oxidative damage was evaluated by measuring the malondialdehyde (MDA) level and superoxide dismutase (SOD) and catalase (CAT) activities. Histological damage was evaluated by inflammation and congestion scores. **Results:** In MTX group MDA levels were significantly higher, CAT and SOD activities were significantly lower than those in the Sham, EPO and NAC groups (P < 0.05). In EPO group MDA levels, CAT, and SOD activities were higher, but not significant than those in group NAC. In group MTX both scores were significantly higher than in group sham (P <0.05). The congestion score of group MTX was significantly higher than those of group EPO and NAC (P <0.05). When the group EPO was compared to the group NAC, the difference was not significant (P >0.05). **Conclusion:** EPO and NAC have significant preventive effects on methotrexate-induced lung damage in rats.