# CO-ADMINISTRATION OF TOLUENE AND XYLENE ANTAGONIZED THE TESTICULAR TOXICITY BUT NOT THE HEMATOPOIETIC TOXICITY CAUSED BY ETHYLENE GLYCOL MONOETHYL ETHER IN SPRAGUE DAWLEY RATS

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Occupational painters are exposed to ethylene glycol monoethyl ether (EGEE), a widely used emulsifying solvent known to cause testicular degeneration and bone marrow depression, together with toluene (TOL) and xylene (XYL) as a mixture. In the previous study [1], testicular atrophy caused by EGEE (200 mg/kg) was shown to be antagonized by co-administration of TOL (250 mg/kg) and XYL (500 mg/kg). This study was conducted to provide histological support for the previously observed antagonistic protective effect of TOL+XYL on EGEE inducible testicular toxicity and to determine whether similar antagonistic effect can be demonstrated against the EGEE derived hematopoietic toxicity. Compared to the extent of seminiferous tubule degeneration caused by EGEE (150 mg/kg, 6 times per week for 4 weeks) , testes of rats given co-administration of TOL (250 mg/kg) + XYL (500 mg/kg) showed dramatically reduced tubular degeneration. Although minimal dose of EGEE causing testicular atrophy was used, WBC and platelet counts were decreased significantly.

In the TOL+XYL treated control group, the WBC and platelet counts were not decreased. The bone marrow depression caused by EGEE was not reversed by the combined administration of TOL+XYL, however.

In all experimental groups (EGEE alone, TOL+XYL, EGEE+TOL+XYL), plasma levels of creatinine and alkaline phosphatase were significantly decreased and indicated that protein and membrane turn-over were inhibited by these organic solvents. In addition to the marked testicular atrophy, EGEE decreased the weights of adrenal glands and epididymis and suggested that male steroid hormone balances may be disrupted. In conclusion, while the testicular degeneration caused by EGEE was antagonized by TOL+XYL, the EGEE derived hematopoietic suppression was not reversed.

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