NADPH-INDUCED OXIDATIVE DAMAGE OF RAT LIVER MICROSOMES: PROTECTIVE ROLE OF CHLORPROMAZINE AND TRIFLUOPERAZINE

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Two widely used antipsychotic drugs, chlorpromazine (CPZ) and trifluoperazine (TFZ) inhibit NADPH-induced microsomal lipid peroxidation (LPO). Study of microsomal membrane fluidity revealed considerable disorganization in its architecture in the presence of NADPH, which can be restored back in the presence of CPZ and TFZ. NADPH-dependent microsomal LPO is catalyzed by NADPH:cytochrome P450 reductase. These drugs also inhibit the activity of this enzyme. TFZ always shows stronger inhibitory effect than CPZ. TFZ contains a trifluoromethyl group (CF3) in its second position that gives rise to stronger electron abstraction tendency by which LPO and NADPH:cytochrome P450 reductase activity is inhibited more potently than by CPZ which contains a chlorine ligand in the same position. Due to the stronger antioxidant property of TFZ, it can be prescribed as a better therapeutic agent, which plays a protective role for the cellular system.

Key words: chlorpromazine, trifluoperazine, microsome, lipid peroxidation, NADPH:cytochrome P450 reductase, membrane fluidity

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