

1. Reserpine, like the uncoupling agent, 2,4-dinitrophenol prevents oxidative phosphorylation but stimulates the rate at which oxygen is reduced.
2. Both reserpine and 2,4-dinitrophenol fail to stimulate oxygen uptake by isolated mitochondria in the presence of arginine.
3. Both 2,4-dinitrophenol and reserpine induce proton permeability in the mitochondrial membrane so that  $H^+$  is absorbed from the suspending medium.
4. When the reaction system contains reserpine, accumulation of  $Ca^{2+}$  by mitochondria is inhibited.
5. Reserpine decreases both ADP:O and P:O ratios which strongly suggest that reserpine is an uncoupling agent.