Changes in the interaction between CNS cholinergic and dopaminergic neurons induced by L-alpha-glycerylphosphorylcholine, a cholinomimetic drug.


Abstract:

The present study investigates the cholinomimetic properties of the drug L-alpha-glycerylphosphorylcholine (alpha-GPC) at CNS level. Experiments using tritium labelled alpha-GPC indicate that the drug reaches the brain after i.p. and per os administration. In order to study the cholinomimetic properties of this drug an indirect functional index of cholinergic activation was used. In fact cholinergic agonists induce an activation of striatal dopaminergic output. alpha-GPC both i.p. and per os administered increased striatal dihydroxyphenylacetic acid (DOPAC) content. In addition, the in vitro K+ stimulated dopamine release was increased in rats treated in vivo with alpha-GPC. Since alpha-GPC has a weak displacing activity in QNB binding, the in vivo cholinergic activity might be due to the fact that this drug may increase the availability of choline for acetylcholine synthesis leading to increased acetylcholine production. This activity may be useful in those situations such as aging in which cholinergic activity is deficient.