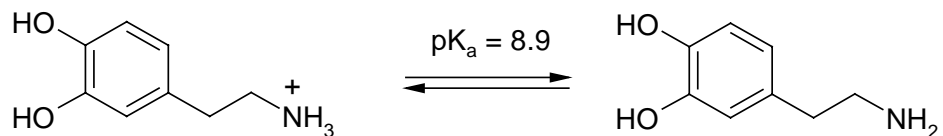


Drug Metabolism, Prodrugs

Parkinson's disease is characterized by a progressive loss of neurotransmitter dopamine. The equilibrium between the protonated and the neutral form is shown below.



- Why the oral administration of dopamine is not an effective treatment of Parkinson's disease?
- Propose a prodrug approach to overcome the limited efficacy of oral dopamine?
- How could you ensure that the formation of dopamine from your prodrug occurs mainly in the nervous tissue?
- Propose a major metabolic reaction that leads to the inactivation of dopamine in the brain
- Propose a major metabolic reaction that leads to inactivation of the prodrug outside the brain
- Propose approaches to protect the prodrug or dopamine from degradation, thus prolonging their action.