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## SUMMARY

4'-Tritiated pyridoxamine-5'-phosphate was prepared by  $\alpha$ -dialkylamino acid transaminase catalyzed transamination of pyridoxal-5'-phosphate in  $T_2O$ . This was converted to 4'-tritiated pyridoxamine by hydrolysis. Ninety per cent of the radioactivity was removed when this compound was used as a substrate for pyridoxamine-pyruvate transaminase, indicating that  $\alpha$ -dialkylamino acid transaminase and pyridoxamine-pyruvate transaminase exhibit the same stereospecificity of proton transfer during transamination.

The stereospecificity of  $\alpha$ -dialkylamino acid transaminase was the same whether AIB or L-alanine was the amino acid substrate, indicating that the nature of the bond cleaved to initiate transamination does not affect the stereospecificity of proton transfer by this enzyme.

Tritium was transferred from the  $\alpha$ -carbon of L-alanine to the 4'-C of pyridoxal-5'-phosphate with approximately 50% efficiency. This implies that proton removed from the  $\alpha$ -carbon of the amino acid substrate and addition to the 4'-carbon of pyridoxal-5'-phosphate occurs on the same side of the cofactor plane in this reaction.