ASYMMETRIC SYNTHESIS USING CHIRAL KETENE EQUIVALENT AND SYNTHESIS OF HOMOCARBOVIR

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Ketene equivalents have found widespread use as partners in Diels-Alder reactions for the construction of cyclic, fused and bridged unsaturated ketones. We have developed a new chiral ketene equivalent racemic and enantiomerically pure form in four steps and found highly reactive and highly diastereoselective (>97:3) in Diels-Alder reactions with a range of simple dienes (cyclopentadiene, 1-methoxybutadiene, furan, Danishefsky's diene, 1-metoxycyclohexa-1,3-diene). The Diels-Alder adducts can be readily deprotected to return the carbonyl group using a two step sequence involving reduction followed by hydrolysis.

The carbocyclic nucleosides and their analogs have found potential as anti-tumor, anti-HSV and anti-HIV agents. We have prepared the racemic homocarbovir in 6 steps from commercially available norborn-5-en-2-ol 5 in good yield (79%).

References