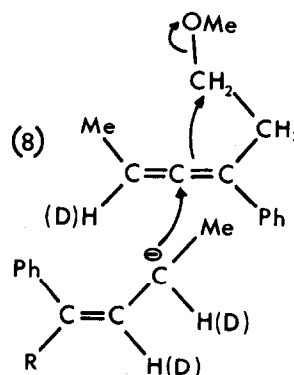


TABLE Product yields of reactions of alkynol(1) with lithium aluminium hydride (deuteride) in tetrahydrofuran.

Concentration (g l ⁻¹) of alkynol(1) in THF	Product Yields				Attack by H ⁻ (D ⁻) at C4:C5 leading to (4) Overall	
	(2)	(3)	(4)	(6)		
20	7	30	51	-	46:5 ²	46:42 ³
2	6	8	67	8	47:20	47:42

in compounds (2) and (3) are consistent with their formation *via* deuteride ion attack on the intermediate deuterioallene(6), followed by reactions of the delocalised carbanion(7). Internal displacement of methoxide ion from carbanion(7) would yield the cyclopropane derivative(2), while the dimer(3) could be formed by intermolecular attack (see (8)) on a second deuterioallene(6), again with loss of methoxide ion.

In more dilute solution (2g l⁻¹ alkynol(1), still 1:1 molar equivalents LiAlH₄) the yield of dimer(3) was sharply reduced (Table) consistent with an intermolecular mechanism, and the unstable allene(6) was isolated. From the corresponding lithium aluminium deuteride reduction of alkynol(1), the compounds (2), (3) and (6) carried deuterium labels at the expected positions, while the higher yield of the monodeutero-(E)-alkenol(4) was a reflection of incomplete conversion of carbanion(5) into deuterioallene(6) prior to reaction quenching. Unfortunately allene(6) proved in our hands to be too unstable for a convincing conversion into compounds (2) and (3) by reaction with lithium aluminium hydride.



NOTES

1. Satisfactory elementary analysis data were obtained for new compounds.
2. These ratios were determined from a comparison of the peak intensities of the protonated alkene-carbons in the repetitive-pulse, Fourier-transform ¹³C n.m.r. spectra of monodeuteriated products(4), all obtained under near-identical conditions to minimise effects due to possible differences in carbon relaxation times.
3. These values are estimated to be ±3.

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