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Hashim Al-badri^a; Elie About-jaudet^a; Noel Collignon^a

^a INSA-IRCOF, Mont-Saint-Aignan Cedex, France

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HYDROXYALKYLATION OF α -PHOSPHONYLATED α -SILYLATED ALLYLIC CARBANIONS. AN UNEXPECTED CYCLIZATION REACTION

HASHIM AL-BADRI, ELIE ABOUT-JAUDET and NOEL COLLIGNON*
 INSA-IRCOF, Place E. Blondel, BP 08, 76131 Mont-Saint-Aignan Cedex, France

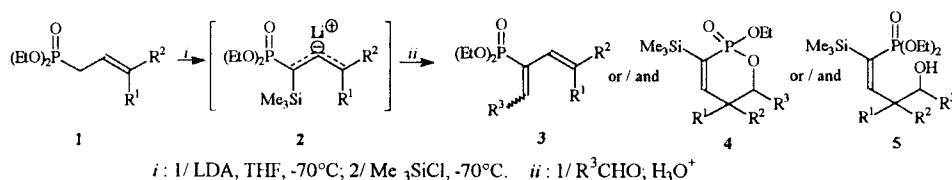
Abstract When reacted with aldehydes, *in situ* generated title carbanions **2** can give phosphonodienes (**4** or **6**), phosphonolactones (**5** or **8**) or phosphonoalcohols **7**, depending on structure of reagents and on reaction conditions.

INTRODUCTION

Carbanions derived from γ -substituted allylic-type phosphonates **1** show high α -regioselectivity in their reactions with electrophiles [1-3]. We have recently proved that the nucleophilic reactivity of such anions is dramatically modified by the presence of trimethylsilyl group in the α position [4]. We hereby present results concerning the reactivity of these *in situ* generated carbanions **2** towards aldehydes (Scheme).

RESULTS

In the cinnamyl series ($R^1=H$, $R^2=\Phi$), usual Peterson reaction occurs giving phosphonodienes **3**, in excellent yield. In the prenyl series ($R^1=R^2=Me$), γ -regioselective reaction is observed, leading to phosphonolactones **4**, as the sole product with aromatic aldehydes, or as the major product with aliphatic aldehydes (minor product is diene **3**). In the crotyl series ($R^1=H$, $R^2=Me$), strict γ -regioselectivity is observed with aromatic or aliphatic aldehydes : phosphonoalcohols **5** can be isolated after acidic hydrolysis at $-70^\circ C$. By raising the reaction temperature or by warming **5** near $50^\circ C$, phosphonolactones **4** are obtained, in very good yield and with good diastereoselectivity.



REFERENCES

- [1] C. YUAN and C. LI, *Heteroat. Chem.*, **3**, 637 (1992).
- [2] E.L. MULLER, A.M. MODRO and T.A. MODRO, *Bull. Soc. Chim. Fr.*, **131**, 959 (1994).
- [3] H. AL-BADRI, E. ABOUT-JAUDET and N. COLLIGNON, *Synthesis*, 1092 (1994).
- [4] H. AL-BADRI, E. ABOUT-JAUDET and N. COLLIGNON, *Tetrahedron Lett.*, **36**, 393 (1995).