

# Highly stereoselective aldol reactions of lithium ester enolates with (R<sub>s</sub>)-2-(p-tolylsulfinyl)cyclohexanones

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Aldol reactions lithium alkyl acetates (LiCRR<sup>1</sup>CO<sub>2</sub>R<sup>2</sup>) with (R<sub>s</sub>)-2-(p-tolylsulfinyl)cyclohexanone (1) (as an epimeric mixture at C-2) take place with very efficient control of the configuration at the tertiary hydroxylic carbon (C-1). Stereoselectivity becomes complete if R and/or R<sup>2</sup> are not hydrogen. Only carbinols derived from (S<sub>2</sub>,R<sub>s</sub>)-1 epimer were obtained, the major ones being those exhibiting S configuration (opposite to that of the sulfur) at the hydroxylic carbon. When LiCHR<sup>1</sup>CO<sub>2</sub>R<sup>2</sup> is used, mixtures of the two epimers at the new stereogenic center C-1<sup>1</sup> are obtained (70-82% de), their proportion being dependent on the size of R. The use of lactone enolates avoids the formation of epimeric mixtures, affording only one diastereoisomer with an (R<sup>3</sup><sub>1</sub>,S<sub>1</sub>,S<sub>2</sub>,R<sub>s</sub>) configuration at the four adjacent chiral centers. Tricoordinated lithium species, which involve the enolate and the sulfinyl and carbonyl oxygens of the substrates, are invoked to explain the stereoselectivity observed in these a