those procedures which involve 3-arylisoquinoline intermediates, because these synthons could be also involved in the synthesis of other alkaloid skeletons, such as protoberberines. We recently reported the synthesis of 3-arylisoquinolines which are crucial intermediates for the preparation of benzophenanthridines. This method offers an efficient route for diverse natural alkaloids. The convenient synthesis of chelerythridine will be described.

[PD1-9] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Electronic Factor in Cinchona Alkaloid Ammonium Salts Phase-Transfer Catalysts

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Phase-transfer catalytic reactions (PTC) have been widely applied in organic synthesis. The operational simplicity and mild reaction conditions enable this method become very useful methodology for the practical and industrial process. Recently chiral quaternary ammonium salts has arisen as useful phase-transfer catalysts for asymmetric synthesis. Especially a series of cinchona alkaloid type quaternary ammonium salts were introduced as chiral phase-transfer catalysts because of its cheap and commercial availability. Since the first introduction of N-benzylcinchonidinum halide by the O'Donnell, the more efficient catalysts, N-(9-anthracenylmethyl)cinchonidinum halide were independently developed by Lygo and Corey by the introduction of the bulky group on N(1) position. Also recently dimeric and trimeric catalyst were prepared as an efficient catalyst using benzene as a ligand. As part of our program for the mechanistic study in the alkylation using cinchona alkaloid type phase-transfer catalysts, we investigate the role of the electronic factor in enantioselectivity. Because the ion-pair of the quaternary ammonium cation and anionic substrate is important intermediate in the stage of the chiral induction, the electronic effect of N(1)-substituents might influence the enantioselectivity. In this poster, we report the role of the electronic factor in N(1)-benzylcinchonidinium ammonium salt.

[PD1-10] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Asymmetric synthesis of (2R, 3S, 4E)-2-Amino-5-phenyl-pent-4-ene-1,3-diols

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(2R, 3S, 4E)-2-Amino-5-phenyl-pent-4-ene-1,3-diols had been stereoselectively synthesized. (1R, 5R)-(+)-α-Pinene was treated with KMnO4 to give (1S, 2S, 5S)-(-)-2-hydroxy-3-pinanone, which reacted with ethylglycinate, boron trifluoride etherate and then with ClTi(OEt3), arylpropenal to yield (1S, 2S, 5S)-aldol compounds. These Compounds were hydrolyzed with HCl and reduced with NaBH4 to give (2R, 3S, 4E)-2-amino-5-phenyl-pent-4-ene-1,3-diols.

[PD1-11] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Mechanism Studies on CSI reaction of p-Substituted Phenylallyl Methyl Ethers

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We have recently described synthetic method for N-protected allylic amines from allyl ethers using chlorosulfonyl isocyanate(CSI) via the stable allylic carbocation, and furthermore, we developed novel

technique to compare directly the stability of carbocations in the solution phase using CSI reaction.
Our previous report showed that the CSI reaction of cinnamyl methyl ether produced the terminal allylic amine as major product (1 : 2.7), and 1-phenylallyl methyl ether yielded a similar result. But, treatment of 4-phenylbut-2-enyl methyl ether with CSI furnished methyl N-(1-benzylallyl)carbamate and methyl N-(4-phenylbut-2-enyl)carbamate as a 1 : 1.1 mixture of regioisomers, however, the 1-benzylallyl methyl ether gave an inversed product ratio (4.6 : 1) in favor of the internal allylic amine.
In this presentation, we will report the results of CSI reaction with p-substituted cinnamyl methyl ethers and p-substituted phenylallyl methyl ethers. Also, we will discuss the effect of p-substituent on CSI reaction, and the mechanism of these reactions.

[PD1-12] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Comparative Molecular Field Analysis of Combrestatins active against A-549 Tumor Cell

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Combrestatins, isolated from Combretum caffrum, exhibit the potent cytotoxicities against various human tumor cell lines including multi-drug resistant cancer cells. These compounds also bind to tubulin on the colchicine binding sites. Not only for overcoming the low water solubility of Combrestatin-4 but also for developing more potent molecules, synthesis of new compounds were performed by many research groups. For the study of quantitative structure-activity relationship of these compounds, comparative molecular field analysis (CoMFA) was carried out using Sybyl 6.6 software with newly synthesized compounds and published data. A molecular modeling study was undertaken to develop a predictive model for combretastatins that inhibit the A-549 tumor cell line. We examined a series of molecular alignments for the training set and ultimately found that overlapping the respective trimethoxyphenyl rings (A ring) of the analogues yielded the best correlated model. The CoMFA gave a reasonable cross-validated R2 value. The precise investigation of electrostatic and hydrophobic favoring areas will be presented.

[PD1-13] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Synthesis and Cytotoxic Activities of Benzoquinoxalinediones

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Topoisomerases are enzymes that can change the topological state of DNA through the breaking and rejoining of DNA strands. These have been shown to be important, often essential, cellular proteins involved in nearly all aspects of DNA metabolism and structure. Topoisomerase inhibitors have also gained wide clinical significance due to their efficacy as antitumor agents.
The amino substituted azaanthraquinones have attracted much interest due to their possible role as topoisomerase inhibitors. In this study, we describe synthesis and cytotoxic activities of a series of benzoquinoxalinedione derivatives. These were designed based on the SAR of azaanthraquinones and structual analysis of products which are fitted with doxorubicin.

[PD1-14] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Novel Diastereoselective Synthetic Method for 1, 2-Aminoalcohols

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