

Patents and Research Articles (Professor Vinod Singh)

Patents

1. Preparation of 6,7,8,9-Tetrahydro-5H-indolo[3,2-d]pyrimidines and Analogs as GABA Receptor Ligands (A. Thurkauf, A. Hutchison, and V. K. Singh, **International Patent**, WO 92 06, 094, 1992; CA 117: 48538t).
2. Certain Cycloalkyl and Azacycloalkyl Pyrrolopyrimidine; A new class of GABA Brain Receptor Ligands (A. Thurkauf, A. Hutchison, and V. K. Singh, **U.S. Patent**, 1993, No. 5,216,159).
3. Process for Preparation of Cycloalkyl- and azacycloalkylpyrrolopyrimidines Useful as GABA_a Receptor Ligands (A. Thurkauf, A. Hutchison, and V. K. Singh, **Braz. Patent No.**, 1994, 92 01, 262; CA 121: 255817f).
4. Benzimidazole and Pyridylimidazole Derivatives (G. Li, J. M. Peterson, P. Albaugh, K.S. Currie, G. Cai, L.M. Gustavason, K. Lee, A. Hutchison, G.D. Maynard, J. Yun, L.H. Xue, M. Ghosh, N. Liu, G.P. Luke, V.K. Singh, and S. Mitchell **U.S. Patent** filed on 21-12-2001; Case no. 01-019A).
5. Novel Molecules to develop drug for treatment of Osteoporosis (K.V.S. Rao, M.R. Wani, V. Manivel, P.S. Parameswaran, Vinod K. Singh, R.V. Anand, E. Desa, G.C. Mishra, A. Chatterji **Indian Patent** 0412NF2003, India, 27/02/2004).
6. Molecules for inducing differentiation of dendritic cells (A. Chatterji, K. Natarajan, V. Manivel, K.V.S. Rao, P.S. Parameswaran, Vinod K. Singh, and R.V. Anand 0410NF2003, **WO Patent**, 31/12/2003, PCT/IN03/00432).
7. Novel Molecules to develop drug for treatment of Osteoporosis (K.V.S. Rao, M.R. Wani, V. Manivel, P.S. Parameswaran, Vinod K. Singh, R.V. Anand, E. Desa, G.C. Mishra, A. Chatterji 0412NF2003, **WO Patent**, 31/12/2003, PCT/IN03/00431).
8. Novel Molecules to develop drug for treatment of Osteoporosis (K.V.S. Rao, M.R. Wani, V. Manivel, P.S. Parameswaran, Vinod K. Singh, R.V. Anand, E. Desa, G.C. Mishra, A. Chatterji 0412NF2003, **US Patent**, 30/12/2003, 10/747,671).
9. Molecules for inducing differentiation of dendritic cells (A. Chatterji, K. Natarajan, V. Manivel, K.V.S. Rao, P.S. Parameswaran, Vinod K. Singh, and R.V. Anand 0536NF2003, **WO Patent**, 31/12/2003, PCT/IN03/00476).

Research Articles

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10. A Three-Carbon Annulation of Methyl Oleate to a Prostaglandin Analog (V. K. Singh and Sukh Dev, **Indian J. Chem.**, 1983, 22B, 319).
11. A Simple, Biogenetically Modelled Synthesis of 4-(methyl thio) Butyl Thiocyanate: The Reaction of Thiocyanate Anion with S-Methyl-(1,n)-epithionium ions (M.H. Benn and V. K. Singh, **Can. J. Chem.**, 1986, 64, 940).
12. A Stable and Easily Prepared Catalyst for the Enantioselective Reduction of Ketones. Application to Multistep Synthesis (E. J. Corey, R. K. Bakshi, S. Shibata, C. P. Chen and V. K. Singh, **J. Am. Chem. Soc.**, 1987, 109, 7925).
13. Ricinoleic Acid to Prostaglandins-I: Synthesis of Methyl 2-(6'-Methoxycarbonylhexyl)-cyclopent-2-en-1-one-3-carboxylate & PGE₁ (S. Swaminathan, V. K. Singh & Sukh Dev, **Indian J. Chem.**, 1988, 27B, 1069).
14. The Chemistry of Thujone. XIV. Synthesis of Biologically Active Aryl Terpenoid Analogs (C. Carvalho, W. R. Cullen, M. D. Fryzuk, H. Jacobs, B. R. James, J. P. Kutney, K. Piotrowska, and V. K. Singh, **Helv. Chim. Acta.**, 1989, 72, 205).

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15. Practical & Useful Methods for the Enantioselective Reduction of Unsymmetrical Ketones (V. K. Singh, **Synthesis**, 1992, 7, 605).
16. A Mild Method for Conversion of Epoxides into α -Chloro Ketones (S. Raina, D. Bhuniya, and V. K. Singh, **Tetrahedron Lett.**, 1992, 33, 6021).
17. Inversion of Configuration of α -Trisubstituted (Neopentyl) type Secondary Alcohols (R. M. Moriarty, H. Zhuang, R. Penmasta, K. Liu, A. K. Awasthi, S. M. Tuladhar, M. S. C. Rao and V. K. Singh, **Tetrahedron Lett.**, 1993, 34, 8029).
18. Homochiral Lithium Amides: Enantioselective Deprotonation of Cyclohexene Oxide (D. Bhuniya and V. K. Singh, **Synth. Commun.**, 1994, 24, 375).
19. Enantioselective Deprotonation of Cyclohexene Oxide to (*R*)-2-Cyclohexen-1-ol (D. Bhuniya and V. K. Singh, **Synth. Commun.**, 1994, 24, 1475).
20. Recent Aspects of Enantioselective Epoxidation of Olefins (A. DattaGupta, D. Bhuniya, and V. K. Singh, **J. Indian. Inst. Sci.**, 1994, 74, 71).
21. Diastereoselective Formation of (2*S*, 4*S*)-1,3-Oxazolidines from (*S*)-Diphenylvalinol (A. DattaGupta, B. Singh, and V. K. Singh, **Indian. J. Chem.**, 1994, 33B, 981).
22. Synthesis of Homochiral Bis (oxazoliny)pyridine Type Ligands for Asymmetric Cyclopropanation Reactions (A. DattaGupta, D. Bhuniya, and V. K. Singh, **Tetrahedron**, 1994, 50, 13725).

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23. Reaction of Epoxides with Activated DMSO Reagent. General Method for Synthesis of α -Chlorocarbonyl Compounds: Application in Asymmetric Synthesis of (3*S*)-2,3-Oxidosqualene (S. Raina and V. K. Singh, **Tetrahedron**, 1995, 51, 2467).
24. Synthesis of Versatile Intermedites for Cyclopentanoid Natural Products via Enantioselective Deprotonation of substituted Cyclopentene Oxide (D. Bhuniya, A. DattaGupta, and V. K. Singh, **Tetrahedron Lett.**, 1995, 36, 2847).
25. DDQ as A Mild and Efficient Catalyst for Deprotection of Tetrahydropyranyl Ethers (S. Raina and V. K. Singh, **Synth. Commun.**, 1995, 25, 2395).
26. New Insight Regarding the Cyclization Pathway for Sterol Biosynthesis from (S)-2,3-Oxidosqualene (E. J. Corey, S. C. Virgil, H. Cheng, C. H. Baker, S. P. T. Matsuda, V. K. Singh, S. Sarshar, **J. Am. Chem. Soc.**, 1995, 117, 11819).

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27. A Mild Method for the Cleavage of tert-Butyldimethylsilyl and Tetrahydropyranyl Ethers by Ceric Ammonium Nitrate (A. DattaGupta, R. Singh, and V. K. Singh, **Synlett**, 1996, 69).
28. Facile Bromination of O-Benzylidene Sugars and THP Ethers with NBS in Chloroform in the presence of AIBN (S. Raina, K. K. Srivastava, E. Sampath Kumar, and V. K. Singh, **Synth. Commun.**, 1996, 26, 121).
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30. Asymmetric Synthesis of 5-Hexadecanolide, Pheromone of the Queen of the oriental Hornet, *Vespa Orientalis* (S. Raina and V. K. Singh, **Tetrahedron**, 1996, 52, 4479).
31. Design, Synthesis, and Application of Chiral Nonracemic Lithium Amide Bases in Enantioselective Deprotonation of Epoxides (D. Bhuniya, A. DattaGupta, and V. K. Singh, **J. Org. Chem.**, 1996, 61, 6108).
32. Cu (OTf)₂-DBN/DBU Complex as an efficient Catalyst for Allylic Oxidation of Olefins with tert-Butyl Perbenzoate (G. Sekar, A. DattaGupta, and V. K. Singh, **Tetrahedron Lett.**, 1996, 37, 8435).

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33. The Antineoplastic Behaviour of Nitrosoureas: An ab initio study (A. Yadav and V. K. Singh, **J. Mol. Structure** (Theochem), 1997, 389, 191.)
34. Reductive Cleavage of *tert*-Butyldimethylsilyl Ether via Intramolecular Transfer of Hydride (P. Saravanan, S. Gupta, A. DattaGupta, S. Gupta, and V. K. Singh, **Synth. Commun.**, 1997, 27, 2695).
35. Catalytic Enantioselective Cyclopropanation of Olefins using Carbenoid Chemistry (V. K. Singh, A. DattaGupta, and G. Sekar, **Synthesis**, 1997, 12, 137).
36. Rearrangement of Epoxides with Lithium Dialkylamide-Lithium *tert*-Butoxide (P. Saravanan, A. DattaGupta, D. Bhuniya, and V. K. Singh, **Tetrahedron**, 1997, 53, 1855).
37. A Practical Synthesis of (2*R*, 5*R*)-Hexanediol (P. Saravanan, S. Raina, T. Sambamurthy, and V. K. Singh, **J. Org. Chem.**, 1997, 62, 2669).

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38. An Efficient Synthesis of Chiral Nonracemic Diamines: Application in Asymmetric Synthesis (P. Saravanan and V. K. Singh, **Tetrahedron Lett.**, 1998, 39, 167).
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40. Asymmetric Kharasch Reaction: Catalytic Enantioselective Allylic Oxidation of Olefins using Chiral Pyridine bis(diphenyloxazoline) - Copper Complexes and *tert*-Butyl Perbenzoate (G. Sekar, A. DattaGupta, V. K. Singh, **J. Org. Chem.**, 1998, 63, 2961).
41. Cu(OTf)₂ Catalyzed Trimethylsilyl Cyanide Addition to Carbonyl Compounds (P. Saravanan, R. Vijaya Anand, and V. K. Singh, **Tetrahedron Lett.**, 1998, 39, 3823).
42. Synthesis of (3*R*, 4*R*)-3,4-Hexanediol from D-Mannitol (P. Saravanan and V. K. Singh, **J. Chem. Res. (S)**, 1998, 497).
43. An Investigation on Desilylation of Alkyl and Phenolic Silyl Ethers using FeCl₃ (P. Saravanan and V. K. Singh, **J. Ind. Chem. Soc.**, 1998, 565 (Invited article for a special issue in the honor of Dr. Sukh Dev).

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47. Solvent Free Thioacetalization of Carbonyl Compounds Catalyzed by Cu(OTf)₂-SiO₂ (R. Vijaya Anand, P. Saravanan, and Vinod K. Singh, **Synlett**, 1999, 415).
48. Enantiomerically Pure β -Amino Alcohols by Enzymatic Resolution (G. Sekar.; R. M. Kamble; V. K. Singh **Tetrahedron: Asymmetry**, 1999, 10, 3663).

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51. An Efficient Method for the Cleavage of Aziridines with Hydroxyl Compounds (B. A. Bhanu Prasad, G. Sekar, and V. K. Singh **Tetrahedron Lett.** 2000, 41, 4677).

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55. An Efficient Synthesis of (3R,4R)-O-Isopropylidene-1,6-Hexanediol (P. Saravanan and V. K. Singh **Synth. Commun.** 2001, 31 1383).
56. One-Step Conversion of Silyl/THP ethers into the Corresponding Acetates (K. L. Chandra, P. Saravanan, and V. K. Singh **Tetrahedron Lett.** 2001, 42, 5309).
57. An efficient Method for Allylation of Ketones with Allylstannanes (R. M. Kamble and V. K. Singh (**Tetrahedron Lett.** 2001, 42, 7525).

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59. A One-Pot Synthesis of β -Chloro Acetates/Benzoates from Epoxides (K.L. Chandra, A. Bisai, and V. K. Singh **J. Chem. Res.** 2002, 221).
60. Synthesis of Chiral Nonracemic 1,2-diamines from O-Acetylmandelic acid: Application in Enantioselective Deprotonation of Epoxides and Diethylzinc Addition to Aldehydes (P. Saravanan, A. Bisai, S. Baktharaman, and V. K. Singh **Tetrahedron** 2002, 58, 4693 (Invited for symposia-in-print).
61. Catalytic Enantioselective Allylic oxidation of Olefins (R. M. Kamble, M. Chandrasekhar, and V. K. Singh **Proceedings in Indian National Science Academy** 2002, 68, A, No. 5, 423 (invited article).
62. An efficient strategy for synthesis of 5-hydroxyalkyl butan-4-olides from D-mannitol: Total synthesis of (-)-Muricatacin (M. Chandrasekhar, K.L. Chandra, and V. K. Singh **Tetrahedron Lett.** 2002, 43, 2773).
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84. Enantioselective One-Pot Three-Component Synthesis of Propargylamines (A. Bisai and Vinod K. Singh **Org. Lett.** 2006, 8, 2405).
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86. Unprecedented Approach towards 2-Substituted Cyclobutanones (S. Baktharaman, S. Selvakumar, and Vinod K. Singh **Org. Lett.** 2006, 8, 4335).
87. Asymmetric Synthesis of (+)-Cardiobutanolide (A. Garg, R..P. Singh, and Vinod K. Singh **Tetrahedron** 2006, 62, 11240).

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90. Enantioselective Diethylzinc Addition to Aldehydes Catalyzed by Ti(IV) Complex of Unsymmetrical Chiral bis(sulfonamide) Ligands of trans-Cyclohexane 1,2-Diamine (A. Bisai, P.K. Singh, and Vinod K. Singh **Tetrahedron** 2007, 63, 598).
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96. Lewis Acid Catalyzed Regioselective Ring Opening of Azetidines with alcohols and thiols (S.K. Dwivedi, S. Gandhi, N. Rastogi, and Vinod K. Singh **Tetrahedron Lett.** 2007, 48, 000).
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