MALIK A. NISHONOV, Ph.D.

Pharmacy, Medical Department, Osh State University

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SUMMARY

* Lecturer in Biochemistry, Medicinal and Organic Chemistry, Chemistry of Natural Products
* Postdoctoral research experience in Medicinal Chemistry and Organic Synthesis for drug discovery and development
* Collaboration with Inhibitex, Inc. in lead optimization phase of drug candidates
* Management and maintenance research laboratories and research projects

EDUCATION

* **Post-doctoral fellow,** Center for Drug Discovery, University of Georgia

Athens, GA, USA, 2003-2010

* **Ph.D. in Chemistry,** The Institute of Chemistry of Plant Substances, Tashkent, Uzbekistan, 1991. Advisor: Prof. Marat S. Yunusov, Academician of Russian Academy of Sciences
* **B.S. in Chemistry,** The National University of Uzbekistan, Tashkent, Uzbekistan, 1984

Advisor: Prof. Musaev U. M.

* **Certificate,** The English languages, Institute of Economics at the University of Colorado Boulder, CO, 2001
* **Diploma,** Two years English languages courses, The Uzbekistan State University of World Languages Tashkent, Uzbekistan, 1985-1987
* **Certificate,** CU Boulder, Lecture, Bioorganic Chemistry in Biotechnology (Prof. Eaton B.), Lecture, Pharmaceutical Biotechnology (Prof. Randolph T.W.), Advanced NMR (Dr. Shoemaker R. K., 2013-2014

PROFESSIONAL EXPERIENCE

**Chief Scientific Officer, Apollo Sciences, Biotechnology**

11380 Smith Rd, Aurora, CO 80010 *January 2023- present*

**Chief Scientific Officer, CNP Operating Inc,**

Centennial, CO *November 2019- December* *2022*

• Lead Research and Development group and manage R&D Lab

• Synthesized minor cannabinoids in large scale

• Developed new cannabinoid products such as cannabinol, cannabichromene, D8-THC, D10-THC, D8-THCO, THCV in kilo scale by modification and transformation from cannabidiol and cannabigerol

**Senior Research Scientist, Precision Plant Molecules,** Denver, CO *October 2018 – November 2019*

• Synthesis, transformation, and modification of minor cannabinoids

• Development of new products (cannabinoid and terpenoids) and their SOP

**Chair of Department of Natural Sciences, Associate Professor,**

**International Medical Faculty, Osh State University, Institute Medical Problems**,

Osh, Kyrgyz Republic, *September 2015- August 2018*

**LC Vision LLC, Boulder,** **CO**,

Chemist *July, 2010 – May, 2015*

**Center for Drug Discovery, College of Pharmacy, University of Georgia, Athens, GA**

Postdoctoral Research Associate *May, 2003- June, 2010*

**Department of Chemistry, University of Georgia, Athens, GA**

Visiting Research Fellow *January, 2002- April, 2003*

Osh State University and Institute of Medical Problems, Osh, Kyrgyzstan

Assistant professor *September, 1996- December, 2001*

Manager of Pharmacology and Toxicology *November, 1994- December, 2001*

Osh State University Osh, Kyrgyzstan

Assistant Professor *September, 1992- December, 2001*

The Institute of Chemistry of Plant Substances at Uzbekistan Academy of Sciences,

Tashkent, Uzbekistan,

Ph.D. Student, Graduate Research *May, 1987- July, 1992*

The Institute of Chemistry of Plant Substances at Uzbekistan Academy of Sciences, Tashkent, Uzbekistan,

Research fellow *November, 1984- April, 1987*

AWARDS

* Certificate, Ethics in Health Research. July, 2016
* Certificate, Pedagogical and Psychology Sciences, development training,

Licenses # LE150001017, Osh SU, Osh, Kyrgyz Republic 2016

* Grant from the Committee of Science and Technologies of the Kyrgyz Republic, 1994-2000
* Award for Outstanding Research, Academic Council of the Institute, Tashkent, Uzbekistan, 1989
* Junior Research Fellow, The Institute of Chemistry of Plant Substances at the Science Academy of Uzbekistan, 1987- 1990

AFFILIATIONS

* American Chemical Society 2003-2008, 2011
* The Mendeleev Russian Chemical Society, 1985-2000
* New York Academy of Sciences, 1996

SKILLS

* Operation with IR, MS, UV, NMR (1D and 2D) and data interpretation
* Chromatography, PTLC, Biotage SP1 System, HPLC, GC, GC-MS
* Management, maintenance and repairing research, laboratory equipments, tools
* Proficient in diverse areas of organic synthesis and chemistry of natural products,
* Software: SciFinder Scholar, Reaxys, ChemBioDraw Ultra, Microsoft Office
* Languages: Professional working proficiency – English, Russian

PUBLICATIONS

* 1 patent and 29 peer-reviewed articles published in national and international sciences journals
* More than 10 presentations in international symposiums and conventions

**LIST OF PUBLICATIONS**

1. **Nishоnov, А. А.,** Vasu Nair, Synthesis of 5(RS)-[2, 4(1H, 3H-pyrimidinedione] tetrahydro-3 (SR) -furan methanol via intramolecular cyclization and biological activity of β-dideoxyapio-furanosyl)-5(E)-2-(bromovinyl) uracil., Journal: The Medicine of Kyrgyzstan. 2018
2. **Nishanov, А. А.,** Vasu Nair, The Synthesis of β-anomeric products of [5-(6-Amino-pyrine-9-yl)-tetrahydro-furan-3-yl]-methanol and 4-Amino-5-fluoro-1- (4-hydroxymethyl-tetrahydrofuran-2-yl)-1H-pyrimidin-2-one and 5-iodo-1- (4-hydroxymethyl-tetrahydrofuran-2-yl)-1H-pyrimidin-2,4-dione. Bulletin of the Osh State University, 2017. Special issue.
3. **Nishanov A. A**., Boronova Z. C., Sultankhodzhaev M. N., Toichiev R.M.,Alcaloids of Delphinium Poltaratskii, The Medicine of Kyrgyzstan 2016, 37-40
4. **Nishanov A. A**., Boronova Z. C.,Toichiev R.M., Alkaloids of Aconitum Tuberosium, Structure of tuberaconitine and tubermesaconitine, Bulletin of the Osh State University, 2015, 77-80
5. **US Patent**, Patent Number: 8,703,801, Pyridinone Hydroxycyclopentyl Carboxamides: HIV Integrase Inhibitors With Therapeutic Applications, April 2014
6. Maurice Okello, **Malik Nishonov**, Pankaj Singh, Sanjay Mishra, Naveen Mangu, Byung Seo, Machhindra Gund, and Vasu Nair; Approaches to the Synthesis of a Novel, anti-HIV Active Integrase Inhibitor, *Organic & Biomolecular Chemistry,* **2013**, September
7. Maurice Okello, Sanjay Mishra, **Malik Nishonov**, Vasu Nair; The Notable difference in anti-HIV activity of integrase inhibitors as a consequence of geometric and enantiomeric conﬁgurations, *Bioorganic and Medicinal Chemistry Letters,* **2013,** 23, 4112–4116
8. Maurice O. Okello, Sanjay Mishra, **Malik Nishonov**, Marie K. Mankowski, Julie D. Russell, Jiayi Wei, Priscilla A. Hogan, Roger G. Ptak, Vasu Nair; A novel anti-HIV active integrase inhibitor with a favorable *in vitro* cytochrome P450 and uridine 50 di-phospho-glucuronosyltransferase metabolism proﬁle,

*Antiviral Research* **2013,** 98, 365–372

1. Byung I. Seo, Vinod R. Uchil, Maurice Okello, Sanjay Mishra, Xiao-Hui Ma, **Malik Nishonov**, Qingning Shu, Guochen Chi, and Vasu Nair; Discovery of a Potent HIV Integrase Inhibitor that Leads to a Prodrug with Significant anti-HIV Activity,

*ACS Medicinal Chemistry Letters*, **2011,** 2 (12), pp 877–881

1. Nair, V., Okello, M., **Nishonov, A. A.,** Mishra, S.; "Pyridinone Hydroxycyclopentyl and Oxopyrrolidino Carboxamides: HIV Integrase Inhibitors with Therapeutic Applications.” **WO,**  **2011**/071849 A2
2. **Nishonov, A. A.;** Xiaohui, M.; Nair, V.; Azadideoxyadenosine: Synthesis, enzymology, and anti-HIV activity. *Bioorganic and Medicinal Chemistry Letters* (16), **2006,** 4099-4101.
3. Bhattacharyya, J.; **Nishonov, A. A.;** Felix, L. P.; Pires, F.O.M.; Majetich, G. M.; Constituents of *Encyclia Longifolia Schltr. (Orchidaceae*), *Brazilian Journal of Pharmacognosy* 16(1) 22-23, Jan/ Mar. **2006.**
4. Teshebaeva, U.T.; Sultanhodzhaev, M.N.; **Nishanov, A.A.;** Alkaloids of A*conitum kirinense*: structure of akiramidine. *Chemistry of Natural Compounds* **1999,** 35(6), 659-660.
5. Teshebaeva, U.T; M.N. Sultanhodzhaev, M.N.; **Nishanov, A.A**; Akiradine, a new alkaloid from *Aconitum kirinense*. *Chemistry of Natural Compounds* **1999**, 35(6), 692-95.
6. Teshebaeva, U.T.; Sultanhodzhaev, M.N.; **Nishanov, A. A.;** Alkaloids of *Aconitum kirinense*: the structure of akiramine. *Chemistry of Natural Compounds* **1999,** 35(4), 445-447.
7. Sultanhodzhaev, M.N.; Boronova, Z. S; **Nishanov, A. A**.; Akiranine - a new alkaloid from *Aconitum kirinense*. *Chemistry of Natural Compounds* **1997,** 33(6), 700-702.
8. Keneshov, B. M.; Kuliev Z. A.; Vdovin,A. D.; Abdullaev, N. D.; Makhmatkulov, A. B.; **Nishanov, A. A**.; Proanthocyanidins of *Polygonum coriarium* III: structures of proanthocyanidins T1 and T2. *Chemistry of Natural Compounds* **1997,** 33(4), 453-457.
9. Keneshov, B. M.; Kuliev, Z.A.; Vdovin, A. D.; Abdullaev, N. A.; **Nishanov, A. A.;** Proanthocyanidins of *Polygonum coriarium* IV: structures of proanthocyanidins T3 and T4. *Chemistry of Natural Compounds* **1997**, 33(5), 548-553.
10. Sultanhodzhaev, M. N.; **Nishanov, A.A.;** Proposed biogenesis of diterpenoid alkaloids. *Chemistry of Natural Compounds* **1995,** 31(3), 337-354.
11. Sultanhodzhaev, M. N.; Yusupova, I. M.; Tashodzhaev, B.; **Nishanov, A.A.;** Akiran – a new bisnorditerpene alkaloid from *Aconitum kirinense*," *Chemistry of Natural Compounds* **1994**, 30(5), 651-55.
12. **Nishanov A.A.;** Sultanhodzhaev, M.N.; Chemical modification based on diterpene alkaloids - new derivatives of karakoline and talatisidine," *Chemistry of Natural Compounds* **1994,** 30 (4), 521-524.
13. **Nishanov, A.A.;** Sultanhodzhaev, M. N.; Kondratév, V. G.; Alkaloids of the aerial part of Aconifum kirinense. Chemistry of Natural Compounds 1993, 23(5), 734-736.
14. **Nishanov, A.A.;** Tashkhodzhaev, B.; Yusupova I.M.; Sultanhodzhaev, M.N.; Alkaloids of Aconitum kirinense: structure of akirine. Chemistry of Natural Compounds 1992, 25(5), 534-538.
15. **Nishonov, A.A**.; Sultanhodzhaev, M. N.; Yunusov, M.S.; Yusupova, I.M.; Tashkohozhev, B.; Alkaloids of Aconitum talassicum: the structure of talassamine, talassimidine, and talassimine. Chemistry of Natural Compounds 1991, 27 (1,) 93-98.
16. **Nishanov, A.A.;** Sultonhodzhaev, M.N; Yunusov, M.S.; Kondiatév, V.G.; Alkaloids of Acouitum rubicundum. Chemistry of Natural Compounds 1991, 27 (3), 403-407.
17. **Nishanov, A.A.;** Sultanhodzhaev, M. N.; Yunusov, M. S.; Kondrat'ev, V.G.; 8-acetylexcelsin – a new alkaloid from Aconitum kirinense. Chemistry of Natural Compounds 1991, 27(2), 258-261.
18. **Nishanov, A. A**.; Sultanhodzhaev, M. N.; Yunusov, M. S.; 11-dehydrokobusine-a new alkaloid from Aconitum talassicum. Chemistry of Natural Compounds 1989, 25 (6), 857-860.
19. **Nishanov, A.A.;** Tashkhoodzhaev, B.; Sultanhodzhaev, M. N.; Ibragimov, B. I.; Yunusov, M.S.; Alkaloids of the aerial part of Aconitum talassicum: structure of actaline. Chemistry of Natural Compounds 1989, 25 (1), 39-44

**PRESENTATIONS**

* Vasu Nair, Byung Seo, Malik Nishonov, Maurice Okello, Sanjay Mishra

University of Georgia, Athens, USA,

Pro-drugs of Strand Transfer Inhibitors of HIV-1 Integrase: Inhibition Data, Structure–Activity Analysis and Anti-HIV Activity. 23rd ICAR Abstract Issue / Antiviral Research 86 (2010) A1–A78

* Vasu Nair, M Okello, B Seo, M Nishonov, S Mishra, V Uchil, P Singh, X Ma, and Q Shu

University of Georgia, Athens, US,

Potent HIV-1 Integrase Inhibitors Assembled on Nucleobase Scaffolds: Anti-HIV Activity, SAR Analysis, Microsome Stability, Cytochrome P450 Data, and Lead Optimization, CROI 2010, 17th

Conference on Retroviruses and Opportunistic Infections, February 16-19, 2010, Moscone Center West, San Francisco, CA, US

* V. NAIR1, S. CHAMBERLAIN 2, J. VERNACHIO 2, V. UCHIL 1, B. SEO 1,A. NISHONOV 1, N. RAJA 2, D. BRYANT 2, E. GOROVITS 2, B. AMES 2, A. HALL 2, J. MUHAMMAD 2, B. GANGULY 2, J. WANG 2, Y. LIU 2, X. MA 1, Q. SHU 1, S. MISHRA 1, M. OKELLO 1, G. HENSON 2, J. PATTI 2;

1Univ. of Georgia, Athens, GA, 2Inhibitex, Inc., Alpharetta, GA

New Pyridinone Diketo Acid Inhibitors of HIV-1 Integrase: Anti-HIV Data, SAR Analysis, Microsome Stability, Cytochrome P450 Studies and Rodent Pharmacokinetics, 49th ICAAC, San Francisco, CA, US September 12-15 2009

* Xohui Ma, Fan Zhang, Malik Nishonov,Qingning Shu, Robert W. Sidwell, Earl R. Kern, and Vasu Nair; New ribonucleosides with surrogate bases: synthesis, enzymology, molecular dockingstadies, and antiviral activity. Inaugurals UGA Conference on Drug Discovery, April 4, 2007.
* Vasu Nair, Xuhui Ma, Fan Zhang, Malik Nishonov, Qingning Shu, Robert W. Sidwell, Earl R. Kern; New Ribonucleosides with Surrogate Bases: Synthesis, enzymology, molecular dockingstadies, and antiviral activity, Antiviral Research, 74, 2007, A1-A97

* Teshebaeva, U.T.; Sultanhodzhaev, M. N.; Nishanov, A. A., Toichiev, R.M.; Diterpenoid Alkaloids of the Flora of Kyrgyzstan *5th International Symposium on Chemistry of Natural Compounds*, May 20-23, 2003, p 201, Tashkent, Uzbekistan.
* Teshebaeva, U.T.; Boronova, Z. S.; Sultankhodzhaev, M. N.; Nishanov, A. A.; Alkaloids of *Aconitum kirinense*, *10th Asian Symposium On Medicinal Plant Species and Other Natural Products*, Bangladesh, Dahka, 2000, p149
* Sultankhodzhaev, M. N.; Nishanov, A. A.; Boronova, Z. S.; Teshebaeva, U.T.; Kondrat’ev, V.G.; Diterpenoid alkaloids of the medicinal plant of *Aconitum kirinense* Nakai, *Proceeding of International Conference dedicated to the memory of V. G. Minaevoy* “Physiologic-biochemical aspects of medicinal plants study”, Apr. 15-18, 1998, p.61, Novosibirsk, Russia
* Boronova, Z. S.; Sultankhodzhaev, M. N.; Nishanov, A. A.; Alkaloids from two *Delphinium species* of the flora of Kyrgyzstan, *Third International Symposium on Chemistry of Natural Compounds*, October 19-22, 1998, p. 38, Bukhara, Uzbekistan
* Amanova, A. A.; Sultankhodzhaev, M. N.; Nishanov, A. A.; Batbayar, D.; Batsuren, N.; Alkaloids of *Aconitum barbatum*, *3d International Symposium on Chemistry of Natural Compounds*, October 19-22, 1998, p. 35, Bukhara, Uzbekistan
* Sultankhodzhaev, M. N.; Nishanov, A. A.; Akiranine a new bisnorditerpenoid alkaloid from *Aconitum kirinense* Nakai, *6th International Symposium on Natural Products*, January 4-8, 1996, p.98, Karachi, Pakistan.
* Nishanov, A. A.; Sultanhodzhaev M.N.; Alkaloids of *Aconitum talassicum* M. Pop and *Aconitum kirinense* Nakai Structures of akirane, 8-acetylexelsine, talasamine, talasimine, and talasimidine *2nd International Symposium on the Chemistry of Natural Compounds*, 22-24 October 1996, p. 58, Eskisehir, Turkey
* Yunusov, M. S.; Nishanov, A.A.; Sutanhodzhaev, M. N.; Usmanova, S. K; Tel’nov, V.A.; Vaisov, Z.; Narzullaev, A.S.; Sobirov, S. S.; New diterpenoid alkaloids with licactonine skeleton from plants of *Aconitum and Delphinium*. *IX-Soviet-Indian Symposium of Chemistry of Natural Products,* Riga, 1989, p.31.