

**Professor Dr. Muhammad Riaz**  
**Tenured Professor of Organic and Medicinal Chemistry**  
**Head**

SA-Centre for Interdisciplinary Research in Basic Sciences (CIRBS)  
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**Specialization:**Organic and Medicinal Chemistry (Natural Product Chemistry, Total Synthesis and Medicinal Chemistry)



**Education and Training**

<b>INSTITUTION AND LOCATION</b>	<b>DEGREE</b>	<b>YEAR(s)</b>	<b>FIELD OF STUDY</b>
Virginia Commonwealth University, Richmond, VA, USA	Post- doctorate	April 2003–April 2004	Medicinal Chemistry
University of Paderborn, Germany	Post- doctorate	July 2001–March 2003	Synthetic Chemistry (Total Synthesis)
H. E. J. Research Institute of Chemistry, University of Karachi, Pakistan	Ph.D.	May 1998–June 2001	Organic Chemistry (Nat. Products Chemistry)
Gomal University, Pakistan	M.Sc.	1994–1997	Organic Chemistry

**Profile:**

Professor Dr. Muhammad Riaz, after his MSc with Gold Medal, earned his PhD in Natural Product Chemistry from world renowned HEJ Research Institute of Chemistry, Karachi. During his PhD he was fortunate to discover novel *bis- and tris-coumarin glycosides*. Right after, during his 2 years post-doctorate from University of Paderborn, Germany, he learnt and accomplished the total synthesis of unique, challenging and potent natural products, *Xyloketal*s series and *Mumbaistatin*. Dr. Riaz then, pursued his thrust to learn medicinal chemistry and had 6 years learning, training, experience of medicinal chemistry from Virginia Commonwealth University (VCU), USA as postdoctoral fellow, research assistant professor and assistant professor (VSU). His medicinal chemistry learnings and focus include the non-sugar anticoagulant and HSP90 modulators. Importantly, now as head of the SA-CIRBS his prime current goal is to find and establish a most competitive and most relevant team of faculty members to ensure the founding vision of SA-CIRBS in accordance with unmet national needs and international competitiveness.

**Research Interests, Expertise and Goals:**

Dr. Riaz utilizes principles, tools, methodologies and diverse wealth of medicinal chemistry, organic synthesis and natural product chemistry for understanding and solving the biological problems involving effective national and international collaborations. Currently the main focuses are to contribute to:

- Design and development non-sugar antithrombin activating anticoagulants using medicinal organic chemistry.
- Exploring HSP90 modulating cancer antiproliferative natural products from the rich wealth of natural curative herbs (using interdisciplinary medicinal chemistry, natural product chemistry and organic synthesis).

- Syntheses and study of designed hybride antibiotics with better tolerance to evolving bacterial resistance.

### Current Research Grants:

1. "Finding HSP90 Modulating Anticancer Natural Products from *Daphne oleoides*" HEC, (PI: **M. Riaz**), **Rs. 4.24 million (NRPU 2019)**

### Research Students:

Current Research Students: MS in Chemistry = 02

Previous Research Students: MSc = 20, MS = 14, PhD = 01 (co-supervised)

### Institution Development Grants and Institutional Services:

1. Organizing Secretary and Focal Person, 2<sup>nd</sup> International Science Conference, "Natural Sciences, Climate & Biodiversity" Organized by the Faculty of Sciences, The University of Azad Jammu & Kashmir, Muzaffarabad, Pakistan September 15-17, 2018.
2. Developmental Grant (Concept paper and PC1) for "Provision of Missing Necessities for the Operational Needs of the King Abdullah Campus of the University of Azad Jammu & Kashmir, Muzaffarabad" (PKR 800 billion) (2017).
3. Development Project for the "Construction of Auditorium at Chella Campus of the University of Azad Jammu & Kashmir, Muzaffarabad", (PKR 220 million), (2018).
4. Contributed to Developmental Foreign Project for the Laboratories Equipment, Rs. 1.34 billion, (2018)
5. International Conference Organizer for International Liaisons: *New Horizons in Drug Discovery and pharmaceutical Sciences*, April, 27-30, 2017.

### Professional Services, Honors and Awards

January 2017 Editor of one International Journal and Reviewer of 4 international journals

February 2015 Member of Prime Minister Evaluation Team for Good Governance of Universities in Pakistan

May 2004 Member of American Chemical Society

Member of various university statutory bodies e.g. TTS-DTRC, BoS, BoF, Academic Council, Selection Board etc.

2001 - 2003 Deutsche Forschungs Gemeinschaft, Research Fellowship Award, Germany

2000 – 2001 Senior Research Fellowship, University Grants Commission, Pakistan

1998 - 1999 Junior Research Fellowship, University Grants Commission, Pakistan

1997 Gold Medal, Gomal University, Pakistan

1996 - 1997 Merit Scholarship, Gomal University, Pakistan

### Selected Publications:

- A. Qadir, **M. Riaz**, M. Saeed, S. Shahzad-ul-Hussan, Potential Targets for Therapeutic Intervention and Vaccine Design Against Zika Virus, *Eur. J. Med. Chem.*, (2018), 156, 444-460.
- **M. Riaz M**, O. Khan, M. A. Sherkheli, M. Q. Khan R. Rashid R, Chemical Constituents of *Terminalia chebula*, *Natural Products: An Indian Joournal*, (2017), 13(3), 112-130.
- **M. Riaz**, A. Bilal, M. S. Ali, I. Fatima, A. Faisal, M. A. Sherkheli, A. Asghar, Promising Natural Products from *Cuscutarefluxa* with anti-proliferation activities in HCT116 Colorectal Cell Lines, *Natural Products Research*, (2017), 31(5), 583-587
- **M. Riaz**, A. Asghar, S. S. Hussan, (2015) Treasures Hunt in Old Mines: *Terminalia Chebula*-Based Traditional Herbal Medicinal Products. *Natural Products Journal*, 5, 252-267.
- **M. Riaz**, A. Saleem, S. Siddique, M. Nur-e-Alam, B. A. Khan, G. A. Miana, M. Q. Khan (2015), *Phytochemistry of Daphne*

*Oleoides*, *Natural Product Research*, **30**, 1-18.

- G. A. Miana, **M. Riaz**, R. Z. Paracha, U. Z. Paracha, S. Shahzad-ul-Hussan(2015), Prostratin: An Overview, *Mini-Reviews in Medicinal Chemistry*, **15(13)**, 1122-1130.
- Ayaz, M., **Riaz, M.**, Malik, A., Ahmed, E., Lodhi M. A., Chaudhary, M. I. (2009), Elaeagnoside, Chymotrypsin Inhibiting Steroidal Glucoside from *Elaeagnus orientalis*. *Natural Product Research*, **23(5)**, 409-414
- Rahman, M. A., **Riaz, M.**, Desai, U. R. (2007), Synthesis of biologically relevant bis-flavanoids – a review. *Chemistry and Biodiversity*, **4(11)**, 2495-2527.
- Raghuraman, A., **Riaz, M.**, Desai, U. R. (2007), Rapid and efficient microwave-assisted synthesis of highly sulfated organic scaffolds. *Tetrahedron Letters*, **48(38)**, 6754-6758.
- Krohn, K., Diederichs, J., **Riaz, M.**(2006). Synthesis of 2'-Dealkylmumbaistatin. *Tetrahedron*, **62(6)**, 1223-1230.
- Ayaz, M., Lodhi, M. A., **Riaz, M.**, Haq, A., Malik, A., Choudhary, M. I. (2006). Novel urease inhibitors from *Daphne oleoides*. *Journal of Enzyme Inhibition and Medicinal Chemistry*, **21(5)**, 527-529.
- Gunnarsson G.T., **Riaz, M.**, Adams J., Desai U.R. (2005). Synthesis of per-sulfated flavonoids using 2,2,2-trichloro ethyl protecting group and their factor Xa inhibition potential. *Bioorganic and Medicinal Chemistry*, **13(5)**, 1783-1789.
- Dantuluri M., Gunnarsson G.T., **Riaz M.**, Nguyen H., Desai U. R. (2005). Capillary electrophoresis of highly sulfated flavanoids and flavonoids. *Analytical Biochemistry*, **336(2)**, 316-322.
- Kolanos R., Siripurapu U., Pullagurla M., **Riaz M.**, Setola V., Roth B. L., Dukat, M., Glennon R. A. (2005). Binding of isotryptamines and indenes at h5-HT6 serotonin receptors, *Bioorganic Medicinal Chemistry Letters*, **15(8)**, 1987-1991.
- **Riaz, M.**, Krohn, K., Malik, A., Flörke, U. (2004). Limbetazolone, a new decahydro-8-oxa-naphtho[2,1-f]azulen-7-one diterpenoid, from *Ballota limbeta* and occurrence of two conformational isomers in the crystal. *Chemistry and Biodiversity*, **1(3)**, 458-462.
- Krohn, K., **Riaz, M.**, Flörke, U. (2004). Synthesis of Xyloketal, Natural Products, from the Mangrove Fungus *Xylaria sp.* *European Journal of Organic Chemistry*, 2004(6), 1261-1270.
- Krohn, K., **Riaz, M.**(2004). Total synthesis of (+)-Xyloketal D, a secondary metabolite from the mangrove fungus *Xylaria sp.* *Tetrahedron Letters*, **45(2)**, 293-294.
- Malik, A., **Riaz, M.**, Akbar, E., Rafique, M., Afza, N. (2003). C-Alkylated coumarin and coumarin glycoside. *Heterocycles*, **60**, 947-951.
- Zahid, M., Ishrud, O, Pan, Y., Asim, M., **Riaz, M.**, Ahmad, V. U. (2002). Flavonoid glycosides from *Salvia moorcroftiana* Wall. *Carbohydrates Research*, **337**, 403-407.
- **Riaz, M.**, Krohn, K., Wray, V., Malik, A. (2002). Dicomarinly ether glycoside from the roots of *Daphne oleoides*. *European Journal of Organic Chemistry*, 2002(8), 1436-1438.
- Mehmood, A., Malik, A., Anis, I., Khan, P. M., **Riaz, M.**, Makhmoor, T., Chaudhary, M. I. (2002). Highly oxygenated triterpenes from the roots of *Atropa acuminata*. *Natural Product Letters*, **16(6)**, 371-376.
- **Riaz, M.**, Malik, A. (2001). Novel coumarin glycosides from *Daphne oleoides*. *Helvetica Chimica Acta*, **84**, 656-661.
- **Riaz, M.**, Malik, A. (2001). Daphsaifnin, dimeric coumarin glycopyranoside from *Daphne oleoides*. *Heterocycles*, **55**, 769-773.
- **Riaz, M.**, Malik, A., Sadhozai, S. K., Hussain, M., Ullah, N. (2001). Daphwazirin, biscoumarin glycopyranoside from *Daphne oleoides*. *Natural Product Letters*, **15**, 433-438.
- Parvez, M., **Riaz, M.**, Malik, A. (2001). Eupatorin from *Otustegialimbata*. *Acta Crystallographica*, **E57**, o289-291.
- **Riaz, M.**, Malik, A. (2001). Structure determination of *Daphjamilin*, new *bicoumarin glycoside*, by NMR studies. *Magnetic Resonance in Chemistry*, **39**, 641-642.
- Akbar, E., **Riaz, M.**, Malik, A. (2001). Ursene type nortriterpene from *Debregessiasalsifolia*. *Fitotrapia*, **72**, 382-385.
- **Riaz, M.**, Ullah, N., Rabnawaz, H., Mehmood, A., Malik, A., Afza, N. (2000). Furonoid and furofuronoid lignans from *Daphneoleoides*. *Zeitschrift Naturforschung*, **55(B)**, 1216-1220.