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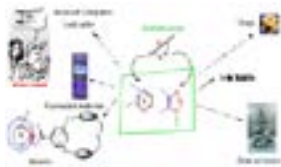
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Azine, diazine and diazoles: Chemistry and applications

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Over the past decades, five and six member ring azaheterocyclic compounds have received considerable attention due to their important applications from pharmacological, industrial, and synthetic points of view. Nitrogen heterocycles derivatives, especially azine, diazine and diazols, were reported as valuable scaffolds in medicinal chemistry, showing variously biological activities such as antiviral and anticancer, antituberculosis and other antimicrobials, etc. On the other hand, these compounds are widely discussed nowadays for their applications in optoelectronics (fluorescent derivatives, chemosensors, logic gates), agriculture (growth regulators, pesticides, insecticides), etc. As part of our ongoing research in the field of azaheterocycles derivatives, we present herein some core results obtained by our group in the field of nitrogen heterocycles derivatives, focused on chemistry and their pharmacological and industrial potential applications. As far as for chemistry, our efforts were concentrated in the area of several classes of azaheterocycles namely diazols (imidazol and benzimidazol especially), fused and non-fused azine (and bis-azine), diazine (and bis-diazine), mono- and bis-indolizines, phenanthroline (1,10- 1,7- and 4,7-). Conventional (thermal heating) and nonconventional (microwave and ultrasounds) methods were used in the synthesis processes. For the pharmacological potential applications, our design was targeted on getting compounds with at least two biological activities, focused in the area of anticancer, antimycobacterial, anti-leishmaniasis, and other antimicrobials. For the industrial potential applications our research was focused on obtaining new chemical entities with fluorescent property, molecular devices (such as logic gates), chemosensors and growth regulators for plants, pesticides and insecticides and ionic liquids for synthetic uses.



Recent publications

1. Olaru A, Vasilache V, Danac R and Mangalagiu I I (2017) Antimycobacterial activity of nitrogen heterocycles derivatives: 7-(pyridine-4-yl)- indolizine derivatives. Part VII, J. Enzym. Inh. Med. Ch. 32(1):1291-1298.
2. Mantu D, Antoci V, Moldoveanu C, Zbancioc Ghe and Mangalagiu I I (2016) Hybrid imidazole (benzimidazole)/ pyridine (quinoline) derivatives and evaluation of their anticancer and antimycobacterial activity, J. Enzym. Inh. Med. Ch. 31(2):96-103.
3. Zbancioc Ghe, Zbancioc A M and Mangalagiu I I (2014) Ultrasound and microwave assisted synthesis of dihydroxyacetophenone derivatives with or without 1,2-diazine skeleton, Ultrason. Sonochem. 21:802-811.
4. Tucaliuc R, Cotea V, Niculaua M, Tuchilus C, Mantu D, et al. (2013) New pyridazine-fluorine derivatives: synthesis, chemistry and biological activity. Part II, Eur. J. Med. Chem. 67:367-372.
5. Zbancioc Ghe, Mangalagiu I I (2010) Pyrrolopyridazine derivatives as blue organic luminophores: synthesis and properties. Part 2, Tetrahedron 66:278-282.

Biography

Ionel I Mangalagiu is a Professor of Organic and Medicinal Chemistry and Vice-Rector for research at "Alexandru Ioan Cuza" University of Iasi, Romania. Previously, he served as Dean, Vice-Dean and Head of Organic Chemistry Department at the Faculty of Chemistry. He has nearly 30 years of experience in research, focused in the area of Heterocycles Compounds. He has over 150 papers, 13 patents, 3 international chapter books, etc. He was Visiting Professor and/or Invited Speaker at prestigious foreign universities (Ludwig Maximilian University Munchen and Technische Universität Braunschweig, University of Florence, Universite D'Angers), awarded with numerous prizes and honours: DAAD and NATO award, "Costin D. Nenitescu Medal" (Romanian Society of Chemistry), "Al I Cuza University Award in Research", "Grand Prize Euroinvent" (Euroinvent, Romania), Special Award of Croatian Association of Inventors, etc.

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