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Synthesis of 2-julolidin-imidazo[1,2-a] pyridines via Groebke–Blackburn–Bienaymé reaction and studies of optical properties

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Bis-heterocycles are structurally complex products containing two linked, spaced, fused, merged or bound heterocyclic frameworks. These compounds have attracted the attention of the synthetic community due to their potential applications in various fields of knowledge, including agrochemistry, materials and polymer science, medicinal chemistry,4 and optics. Interest in optics behind the synthesis of bis-heterocyclic compounds results from their ability to distribute electron density efficiently throughout both heterocyclic moieties via donor–acceptor (D–A) p-conjugation (push–pull effect. Thus, we describe the synthesis of sixteen new imidazo[1,2-a]pyridines bearing julolidine moiety at C-2 position (Fig1). However, the current and most efficient methods for their synthesis are the one pot Multicomponent Reactions (MCR) particularly, the Groebke-Blackburn-Bienaymé Reaction (GBBR). MCR based synthetic strategies to prepare a series of imidazo[1,2-a]pyridines have also been reported. However, the most used methodology to prepare this class of heterocyclic systems is the Groebke–Blackburn– Bienaymé reaction (GBB). Imidazo[1,2-a]pyridine is the core of numerous compounds showing a variety of biological activities such as anticancer, antivirals, antimicrobials, antiParkinson, antimutagenics, antihypoxia, anticonvulsants, antisecretory, and as antiinflamatories. For example, the zolpidem is the most prescribed drug for insomnia. A series of sixteen new 2-julolidin-imidazo[1,2-a]pyridine bound-type bis-heterocycles were synthesized in good to excellent yields (61–98%) via an MW-assisted Groebke–Blackburn–Bienayme reaction. Then, experimental studies were conducted to determine the luminescence properties of these compounds. With respect quantum yields obtained for all compunonds the cyclochexyl derivative of the final product is (86.6%) comparable to that of the reference compound rhodamine (94.8%). The above values give scope for the further studies and applications in optical materials. Finally we developed novel compuounds using bronsted acid catalysed Microwave assited GBB reaction to access 2-julolidin-imidazo[1,2-a]pyridine derivatives as a prominent optical materials.

Biography

Gámez-Montaño Rocío has got her PhD under guidance of Professor Raymundo Cruz-Almanza in UNAM, CDMX, México. After a Post-doctoral fellow under guidance of Professor Jieping Zhu at Gif-Sur-Yvette, France, she was incorporated to University of Guanajuato, México, where she is actually full-time Research-Professor (Class B). Her scientific interest includes design and development of efficient synthesis of heterocycles and poly-heterocycles via MCR, *in vitro* and *in silico* studies of biological properties, applications in optics, as well as study of reaction mechanisms.

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