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Pyrroles - A novel synthetic method for pyrrole derivatives from nitrodienes

Mohamed A El-Atawy, F Ferretti and **F Ragaini**
Alexandria University, Egypt

Pyrrole nucleus is one of the most important heterocycles abundantly found in bioactive natural molecules, forming the characteristic subunit of heme, chlorophyll vitamin B12 as well as in melanin pigments. 1,2,5-Trisubstituted pyrroles display interesting biological properties, such as anti-inflammatory, antipsychotic, spasmolytic and radioprotective. Two clinical examples of pyrroles displaying this pattern of substitution are amtolmetin and tolmetin (non-steroidal anti-inflammatory agents). Generally, pharmaceuticals containing pyrroles are of high value as biological agents such as sunitinib (anti-tumor), ketorolac (analgesic) and the highly successful cholesterol-lowering drug atorvastatin calcium (Lipitor), which is notable as the first drug to earn in excess of $1 billion of sales in its first year. The electronic properties of pyrrole are important in the context of conducting polymers, where poly-pyrroles have found many useful applications. Herein, we report a new and facile method for the synthesis of 2,5-di and 2,3,5-trisubstituted pyrrole using intramolecular reductive cyclization of the easily accessible nitrodienes as starting material catalyzed by palladium complex and with carbon monoxide as a reductant.

Biography

Mohamed A El-Atawy has completed his PhD in organic chemistry, department of chemistry, University of Milan, Italy. Currently, he is working as an Assistant Professor in Alexandria University, Egypt.

mohamed.elatawi@alexu.edu.eg

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