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Synthesis of oxygen and nitrogen heterocycles with potential pharmaceutical properties

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Functionalyzed heterocycles are important structures present in several bioactive natural and unnatural products with medicinal and pharmaceutical properties. For instance, many natural oxocanes such as Laurencin, laurenyne or cis-dihydrorhodophytin, which are secondary metabolites isolated from the red algae genus Laurencia exhibit antimicrobial, insecticidal or cytotoxic activities. The corresponding 7-membered oxacycles occur in a great number of mono- and poliethers (such as raspacionin, 3-epi-sodwanone K 3-acetate, or Hemibrevetoxin B) and exhibit important cytotoxic activity. Similarly, examples of azepanes with medicinal properties are the natural Balanol, fungal metabolite isolated from Verticillium balanolides which is a potent PKC inhibitor, ophiocordin, an antibiotic extracted from cultures of Cordyceps ophioglossoides which exhibit antifungal activity or the unnatural (3R,4R,6S)-trihydroxyazepane, which has shown to be a potent inhibitor against R-mannosidase and R-fucosidase. Following our interest in the synthesis of carbo and heterocycles using silicon-containing substrates, we now present an approach towards the synthesis of different sized oxacycles and nitrogen heterocycles with potential pharmacological properties based in the intramolecular Prins reaction.

Biography

Asunción Barbero studied Chemistry at the University of Valladolid and received her PhD degree at the same university working with Prof. Pulido. She then held Postdoctoral Fellowships at the University of Cambridge for two years working under the supervision of Prof. Ian Fleming in the study of stereocontrol in organic synthesis using silicon chemistry. She came back to Valladolid as Assistant Professor, was promoted to Associate Professor in 2001 and obtained the Spanish habilitation to full Professor in 2012. She has co-authored numerous international scientific publications and has delivered several invited and plenary lectures. Her current interests include the study of the silyl-cupration of multiple bonds and its application to the synthesis of natural and related products.

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