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Chemoselective reactions of Diaminomaleonitrile (Damn) in water

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Diaminomaleonitrile (DAMN) is one of the most versatile reagents in Organic Chemistry. It has been used as a precursor for producing nucleotides and for synthesising a wide variety of heterocyclic compounds including purines, pyrimidines, pyrazines (some which are widely employed in the fluorescent dye industry), imidazoles, biphenylenes, porphyrazines (which have great potential in optical sensor technology) and diimines that are used as catalysts. The reaction of DAMN with aromatic aldehydes is widely known to produce monoimines which are important as synthetic intermediates in the synthesis of drugs, conjugated linear polymers and in the thermostable optical material industry. Most reaction methods described involve the use methanol as a solvent without catalysts, but ethanol and acid catalysis are required if the aldehyde bears a strong electron-withdrawing group.

Earlier in our laboratory we have sought to apply green chemistry principles to the reaction between DAMN and various aromatic aldehydes employing either water as solvent without catalysts or under "solvent-free" conditions, thus obtaining the respective monoimines. The reactions carried out in water were also shown to be chemoselective. The fact that water was used as solvent in this type of reaction makes this a cleaner, more efficient and attractive method for preparing this type of substances.

Biography

Jicli Rojas was born in Barranquilla, Colombia, in 1978. He received his undergraduate degree in Biology and Chemistry from the Universidad del Atlántico in 2003, and in 2011 he obtained his MSc degree from the Universidad Nacional de Colombia, under the supervision of Professor Augusto Rivera, working with the synthesis of a new series of tetrahydrosalen ligands by the reductive ring-opening of bis-benzoxazines. He started his PhD studies under the supervision of Professor Augusto Rivera.

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