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Design and synthesis of benzoazoles incorporating fluorine and piperazine moieties with potential biological activities

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The chemistry of heterocycles has emerged as a fundamental division of organic synthesis which is highly contributed to drug discovery. Structural modification of heterocycles comprises at least half of all organic chemistry research worldwide. Benzazoles, as one class of heterocycles, form the basis of many pharmaceutical, agrochemicals, veterinary, and natural products. Moreover, benzazole derivatives possess a diverse range of biological activities, which make them a good skeletons for drug design. The designed introduction of substituents on benzazole can dramatically alter its biological activity. Fluorine and piperazine are common appendages in valuable therapeutic molecules in medicinal chemistry.

For instance, ciprofloxacin[®] (**1**) is a powerful antibiotic with a broad spectrum of biological activity and its activity was related to the incorporation of fluorine and piperazine¹. Previously, we have successfully synthesized several heterocycles²⁻⁴ (**2-4**) and recently benzoazoles⁵ (**5-8**) bearing fluorine and piperazine as shown in Figure 1.

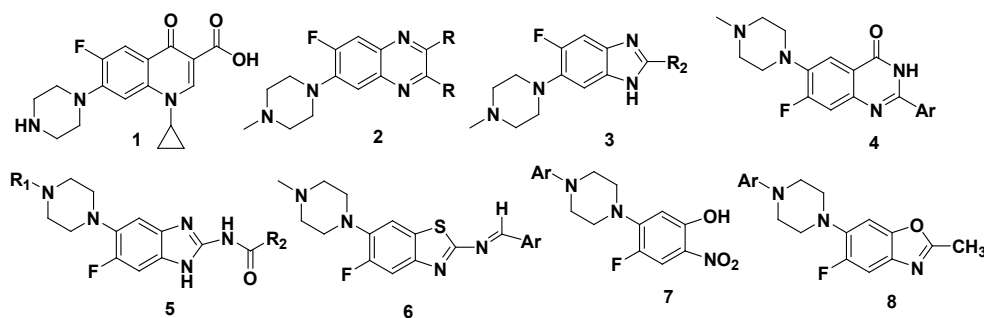


Figure 1

Biography:

Abdel-Jalil, R. J. is Associate Professor in organic chemistry at the Department of Chemistry at Sultan Qaboos University. He was a postdoctoral research fellow in Crump Institute for Molecular Imaging at UCLA. Abdel-Jalil, R.J. earned his doctoral degree in Organic Chemistry at Tuebingen University, Germany under the auspices of German Academic Exchange Service (DAAD) Fellowship. He obtained a Master of Science degree and a Bachelor of Chemistry degree from the University of Jordan, Jordan. Abdel-Jalil is the authored/co-authored of over 40-refereed scientific articles as of May 2016. His research interests include development of new methods in organic synthesis, synthesis of biological active compounds and chemical modification of stationary phases. Abdel-Jalil has developed several new methods in chiral and achiral synthesis of heterocyclic systems.