

Preface

Since many decades, research on bioactive heterocycles is one of the main topics of interest for the medicinal chemists because of a number of pharmacological activities of this class of compounds. Nitrogen, sulphur and oxygen containing five- and six-membered heterocyclic compounds, but even smaller or larger cyclic structures, have occupied enormous significance in the field of medicinal chemistry. The majority of pharmaceuticals and biologically active agrochemicals are heterocycles while countless additives and modifiers used in industrial applications ranging from cosmetics, reprography, information storage and plastics are heterocyclic in nature. One striking structural feature inherent to heterocycles, which continues to be exploited to great advantage by the drug industry, lies in their ability to manifest substituent's around a core scaffold in defined three-dimensional representations. For more than a century, heterocycles have constituted one of the largest areas of research in organic chemistry.

In the recent years a renewed sensitivity to the environmental problems connected with the organic syntheses was the driving force that moves the chemists to introduce novel techniques and particularly eco-friendly procedures. Atom-economy and minimization of side products formation, solvent less conditions, use of unconventional techniques to run reactions (microwave, ultrasound, ball-milling, ionic liquids, etc) were introduced and play a relevant role in today chemistry labs and will be probably more intensively and massively used in the synthetic labs in the next future.

Green chemistry uses highly efficient and environmental benign synthetic procedures to synthesize various bioactive heterocyclic frameworks which are the useful synthons for the synthesis of medicines, plastics, petrochemicals, agrochemicals, cosmetics and many more. Green chemistry has been defined as a set of principles that reduces or eliminates the use or generation of hazardous substances throughout the entire life of chemical materials [1, 2]. Green chemistry offers enhanced chemical process economics concomitant with a reduced environmental burden. Green sustainable chemistry (GSC) is defined as the chemistry and chemical technology for eco-friendly products and processes.

Thus, the purpose behind writing this book is to provide a succinct summary of various green chemistry approaches for the synthesis and biological activities of different bioactive heterocycles.

- [1] Anastas PT, Warner JC (1998) Green chemistry, theory and practice. Oxford University Press, New York
- [2] Clark JH (1999) Forum. Green Chem 1(1):G1–G2

K. L. Ameta
Anshu Dandia

Green Chemistry: Synthesis of Bioactive Heterocycles

Ameta, K.L.; Dandia, A. (Eds.)

2014, XIII, 412 p. 534 illus., Hardcover

ISBN: 978-81-322-1849-4