Summary of Research

The work presented in the Thesis entitled “Synthetic Investigation and Therapeutic Evaluation of Some Nitrogen Based Heterocycles” can be summarized as below.

Chapter 1 briefly summarizes on the preparation of 16 new compounds using UGI MCRs based approach and their importance in synthetic chemistry as well as pharmaceuticals. All the compounds were synthesized by literature method and verified the structure by IR, Mass, $^1$H NMR, $^{13}$C NMR and X-ray diffraction analysis. Furthermore to evaluate all synthesized scaffolds were processed for their anti-cancer and anti-microbial activity.

Chapter 2 covers the study of some Triazole derivatives by using click chemistry approach. All the synthesized compounds were evaluated for their anti-cancer screening using NCI-60 cell lines. Elucidation of final compounds were conformably carried out by using IR, Mass, $^1$H NMR, $^{13}$C NMR.

Chapter 3 includes the synthesis of various $N,N$-Dialkylated triazolo purine derivatives from a simple and efficient route by using 2,6-dichloro-9$H$-purine with hydrazine hydrate followed by a reaction with 3,4-bis(prop-2-yn-1-yloxy)benzaldehyde and various substituted alkyl halide to furnish final product. All the final compounds were confirmed by using various spectroscopic techniques like IR, Mass, $^1$H NMR and $^{13}$C NMR.

Moreover all this compounds were evaluated for their anti-cancer screening, not all but many of synthesized molecules give comparatively good results.

Chapter 4 deals with the synthesis of catalyst free hydrazide based thiazole derivatives support the simple and economically affordable route. Thiazole compounds have wide range of biological activity, due to their diverse pharmacological activities. The synthetic method follows green chemistry approach without using catalyst and at room temperature with time saving method. Applications of synthesized scaffolds were extended by evaluating for their anti-
cancer screening and results shows it may give a diverse scaffold in the field of medicinal chemistry.

Chapter 5 deals with the brief introduction of overall biological screening of synthesized molecules. Out of synthesized 76 compounds 62 compounds were screened for their anticancer screening against NCI 60 cell-lines. Diversity introduced by Ugi, 22 novel scaffolds which are based on TMS-N$_3$ or Chromane-2-carboxamide nucleus were evaluated for their anti-cancer as well as anti-microbial screening at a single concentration i.e. 32 µg/ml.

Thus, 76 compounds are synthesized and characterized in entire thesis work. The synthesized compounds are screened for anticancer and antimicrobial activity, results of which are incorporated in the thesis.
List of Publication


2. Synthesis and Biological Significance of Fluorinated Cyclopropane carbohydrazide based Benzyldene Derivatives; Khushal Kapadiya, Bhavika Joshi, Kinjal Chaniyara, Bansi Bavarava, Kishore Kavadia, Jyoti Gohel and Ranjan Khunt; Chemistry & Biology Interface, 2016, 6, 2, 74-82.
