CONCLUSION
Conclusion

Research work carried out in the thesis include the synthesis of novel heterocyclic entities possessing pyrazolines and pyrimidenedes with the aim of significant antimicrobial screening and heterocycles are based through chalcone derivatives respectively. Based on previous literature survey, we have modified the important scaffold leading to specific structural changes and is extended for synthesis of new chemical entities.

The entire work (both synthesis and application) is divided into three chapters. General introduction about heterocyclic chemistry has been discuss in chapter-1. In chapter-2, work is done on chalcone derivatives. In chapter-3, pyrazoline derivatives are studied. Chapter-4, deals with pyrimidine derivatives.

Chapter-2 deals with synthesis of chalcone derivatives. Among the reported methods the method adopted has found fruitful since yield is in the range of 76-82%. Besides the other heterocycles the parent compounds were also screened for antimicrobial activity for comparison. Some of the chalcones has showed excellent antimicrobial activity and rest of the compounds have shown moderate to good antimicrobial activity.

Chapter-3 the synthesis of various pyrazoline derivatives and chapter is divided in four sections. Yield of all the synthesized pyrazoline derivatives were obtained ranging about 55-70% respectively. No more deviation is found in yields. It is observed that maximum number of compounds with excellent antimicrobial activity were found when pyrazoline ring was substituted with N-CO-C₆H₅-Cl group and no more deviation is observed when pyrazoline ring is substituted at N-1 position.

Chapter-4 deals with pyrimidine entities. Chapter contains five sections, various pyrimidine-2-thiones were synthesized. Yield of all the synthesized pyrazoline derivatives were obtained ranging about 50-65% respectively Results of both chemistry and application is found very satisfactory. Surprisingly, it is observed that presence of both electro donating as well as electro withdrawing groups as
substituent to phenyl nucleus plays an important role in increasing antimicrobial activity.

All the chapters included with the antimicrobial activity of the synthesized compounds. Newly synthesized entities with number of derivatisations and evaluation of antimicrobial screening against representative bacteria namely gram positive and gram negative strains, fungal strain and moreover, the antimicrobial activity of compounds of chapter-4 were better in compare to chapter -2 and chapter -3.

Looking at the antimicrobial activity results (i.e. antibacterial and antifungal), remarkable number of compounds have demonstrated excellent antimicrobial activity as compared to the standard drugs.

All compounds synthesized were checked for purity by TLC, were recrystallised and adequate spectroscopic data IR, $^1$H NMR and $^{13}$C NMR LC Mass supported the constitution of the newly synthesized compounds.

From the present studies, the transformation products of chalcones viz-pyrazoline and pyrimidine derivatives have emerged as potential biologically active system. Further structural modification in these structures will be of interest and may result in compounds having a better therapeutic and biological activity.