PRESENT WORK
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In this part of the thesis, we describe the outline of the work carried out in our research program.

Chapter 1: Preparation of the starting materials.

3-Arylsydnone and 3-aryl-5-methyl-2-oxo-Δ^4-1,3,4-oxadiazoles.

3-Arylsydnone have been used as the starting compounds for the present synthetic work. Chapter 1 contains the details of the preparation of the 3-aryl sydnone by literature methods. These sydnones were further converted to the corresponding 3-aryl-5-methyl-2-oxo-Δ^4-1,3,4-oxadiazoles by one-pot conversion, and were used as the precursors for the compounds described in chapter 2 and 3.

Chapter 2: 4-Amino-1-aryl-3-methyl-5-oxo-Δ^2-1,2,4-triazoles
These compounds have been obtained from 3-aryl-5-methyl-2-oxo-Δ^4-1,3,4-oxadiazolines by one-pot conversion with hydrazine hydrate.

Chapter 3: **PART-A** Acetyl derivatives of 4-amino-1-aryl-3-methyl-5-oxo-Δ^2-1,2,4-triazoles.

Acetylation of the amino group has been carried out to get the corresponding N-acetyl compounds.

**PART-B** Hydrazones of 4-amino-1-aryl-3-methyl-5-oxo-Δ^2-1,2,4-triazoles.

The amino group has also been treated with a variety of carbonyl compounds to obtain the corresponding hydrazone derivatives.

![Chemical structures]

Chapter 4: **Symmetrical bis[1-aryl-3-methyl-5-oxo-Δ^2-1,2,4-triazole-4-yl].**

These bistriazolines were prepared by condensation of 4-amino-1-aryl-3-methyl-5-oxo-Δ^2-1,2,4-triazolines with the 3-aryl-5-methyl-2-oxo-Δ^4-1,3,4-oxadizolines.
Chapter 5: Reactions of \( p \)-(hydrazinocarbonyl)phenylsydnone. Synthesis of some \( p \)-phenylene-1,2,4-oxadiazolinones.

The \( p \)-phenylene-1,2,4-oxadizolines of the following type were synthesized from the \( p \)-(hydrazinocarbonyl)phenylsydnone utilizing the 1,3-dipolar cycloaddition reaction in one of the steps.
3-[4′-(N-3′′-acetyl-2′′-aryl-1′′,3′′,4′′-oxadiazoline-5′′-yl)phenyl-5-methyl-\(\Delta^4\)-2-oxo-1,3,4-oxadiazoles.

Chapter 6: Reactions of \(p\)-carbethoxyphenylsydnone.

Substituted tetrahydrocarbazoles of the following types were prepared from the above sydnone and its hydrazine derivatives by one-pot reaction. Unsuccessful attempts were made to convert the carbethoxy group into the hydrazide group.

Some more substituted tetrahydrocarbazoles were synthesized from sydnones in ~80% yield.

All these newly synthesized compounds have been characterized by elemental analysis, IR, NMR and Mass spectral data.

These compounds have also been screened for their invitro antimicrobial activity against some microbes and the results are compared with reference drugs, to
study the structure-activity relationship (SAR) with respect to the heterocyclic rings and substitutions.

The details of the work carried out is described in the respective chapters. The synthetic strategy, the spectral characterization, the experimental methods used and the biological screening results, have been included in these chapters.