PREFACE

The work described in the thesis is based in part on the synthesis of heterocyclic compounds from readily available starting materials and in part on the investigation of medicinally important plants. In the context of synthesis of heterocycles, different projects were undertaken.

In the first, an attempt was made to obtain new heterocyclic compounds from cheap and easily available starting materials. The compounds selected were 3-formylchromone, 2-amino-3-formylchromone and 2-ureidomethylenecyclohexane-1,3-dione. 3-Formylchromone is readily converted to 2-(4-oxo-4H-[1] benzopyran-3-yl) [1] benzopyrano (3,2-e) pyrimidin-5- (5H)-one 42 and 1-(4-oxo-4H-[1] benzopyran-3-yl) [1] benzopyrano (3,2-d] pyridazin-5- (5H)-one 43 through 3(3-alkyl-5-mercapto-1,2,4-triazolyliminomethyl) chromones 38-40. The structure of these heterocycles was inferred through spectroscopic data. 2-Amino-3-formylchromone is converted to polyketomethylene compounds by treatment with triacetic acid lactone under different reaction conditions. This led to the formation of 3-acetoacetyl-5-oxo-5H-1-benzopyrano-[2,3-e] pyridin-2-one 62 and 6-methyl-2-(4-oxo-4H-1-benzopyran-3-yl)-3-(2'-hydroxybenzoyl)-4-pyridone 68 the structure of which though complicated mechanistically were established through spectroscopic...
studies. 2-Amino-3-formylchromone similarly is converted to 3,3-dimethyl-5-oxo-cyclohexa[2,3-b]-azaxanthone 78 and methyldiene-bis-4, 4-(3-methyl-5-oxo-1-phenylpyrazole 81 with 3-methyl-1-phenyl-5-pyrazolone and 5,5-dimethylcyclohexane-1,3-dione. These compounds were synthesized under mild conditions with improved yield and showed biological activities. In another reaction ureidomethylene cyclohexane-1. 3-dione was treated with 4-hydroxycoumarin. The reaction was carried out in an effort to synthesize coumarin 47 through Knoevenagel condensation type of reaction. The results, however, showed formation of 7-(4-hydroxycoumarin-3-yl)-10, 10-dimethyl-8-oxo-8, 9,10,11-tetrahydropyrano [3,2-c] coumarin 48. The structure was established through spectroscopic data.

In the second part of the thesis efforts were directed towards the separation of active principles from *Piper cubeba, Piper chaba and Zanthoxylum simulans*. The acetone extract of *Piper chaba* yielded a compound which appeared on TLC plate fluorescent. The compound, melting point 240°C showed a strong band at 1660 cm⁻¹ in its IR spectrum. This indicated the possibility of a flavonoid (positive Shinoda test). Its structure, however, could not be established because of insufficient amount of the compound which was needed for getting more exhaustive spectral data. The petrol and benzene extracts of *Piper cubeba* were subjected to column chromatography and yielded cubebin
100 as the only active principle in major quantity. The investigation of *Zanthoxylum simulans* was taken up because other species of this plant had yielded novel alkaloids and coumarins. In the present investigation efforts were made towards separation of a number of phenolic compounds which on TLC plates of the extracts appeared as fluorescent spots. Chromatographic work up of the chloroform extract of *Zanthoxylum simulans*, afforded limonin 101 and flavone 106. This is the first report on isolation of these two compounds from *Z. simulans*. The third chapter is devoted to the antimicrobial screening of the compounds synthesized in the laboratory and isolated from the plant. All compounds showed very good antimicrobial activity against bacteria and fungi including *Candida albicans*. 