SUMMARY

The results of investigations carried out by the candidate are summarised below:

A. Chapter - I : Structure of sardicone.
B. Chapter - II : Further structural studies on mesuol and isomesuol;
a regiospecific synthesis of isomesuagin.
C. Chapter - III : Aminocarbonylation of phenols.

A. Structure of sardicone:

Sardicone, C_{24}H_{42}O_5 (1), M^+ 410, m.p. 245 - 48°C, a neutral, allelochemic compound was isolated from the stem bark of Saraca indica Linn. From the colour reactions the compound was considered to be a triterpene.

The presence of a carbonyl chromophore in sardicone was indicated from its u.v. data, a hump at \( \lambda_{\text{max}} \) 275 nm with \( \log \epsilon 2.62 \), which was also supported from its i.r. spectra (\( \nu_{\text{max}} \) 1700 cm\(^{-1}\)). The presence of hydroxyl function was also discernible from the i.r. spectra (\( \nu_{\text{max}} \) 3400 cm\(^{-1}\)).

Sardicone on acylation with acetic anhydride and pyridine gave a diacetate (2) which gave u.v. peak at \( \lambda_{\text{max}} \) 272 nm (\( \log \epsilon 3.16 \)). The presence of acetocarbonyl was also revealed by the i.r. spectra (\( \nu_{\text{max}} \) 1730 cm\(^{-1}\)).
The PMR spectrum of sardioone showed the presence of one olefinic proton (δ 5.28, 1H, S), two protons adjacent to hydroxyl group (δ 4.20, 1H, S and 3.25, 1H, d), other tertiary, methylinic and hydroxyl protons (δ 2.40 - 1.40, a broad band) and fifteen methyl protons (δ 1.25, 6H, S; δ 1.10, 3H, S; δ 0.95, 3H, d; δ 0.80, 3H, S).

The PMR spectra of sardioone diacetate (C_{28}H_{46}O_7, m.p. 280 - 81°) gave the signals for the protons of acetoxy groups at δ 2.15 (3H, S) and δ 2.01 (3H, S).

The mass spectral data (M+ 410) of sardioone showed a high intensity peak at m/z 207 which suggested the presence of a straight chain of 11 - carbon atoms with 3-hydroxyl group in it, this could also be reconciled with the presence of high intensity peak at m/z 203 in the spectrum. The mass spectral peaks of sardioone at 207 and at 203 move to 249 and to 245 in mass spectrum of sardioone diacetate which support the presence of two acetylable hydroxyl of sardioone in two fragments.

From all the data and discussions presented in the thesis, regarding sardioone and its diacetate the following tentative structure has been assigned to sardioone (1).

![Structure of Sardioone]

1. R = H
2. R = COCH₃
B. Further structural studies of mesuol and isomesuol: a regio-specific synthesis of isomesuegin.

For further confirmation of the structure of mesuol (3) and isomesuol (4) $^{13}$C - NMR spectra and some more reactions have been studied,

![Structures of mesuol (3) and isomesuol (4)](image)

Structures of tetrahydromesuol, decahydromesuol, tetrahydro-isomesuol has been clarified as (5), (6), (7)

![Structures of tetrahydromesuol, decahydromesuol, tetrahydro-isomesuol](image)
For further confirmation of the structure of isomesuol, studies of physical properties and reactions were undertaken.

A regiospecific synthesis of angular isomer (9) of mesuagin (8) has been accomplished as shown below:

(7)

(8)

(4) \[ \rightarrow \] \[ \text{DBN} \] \[ (9) \]
C. Aminocarbonylation of phenols: -

Aminocarbonylation of phenol, p-cresol, α-naphthol and resorcinol, with ethyl carbamate in presence of catalyst anhydrous AlCl₃ gave the compounds given below.
The competition of O- amino-carbonylation and C- amino-carbonylation of phenols, simulates the results of competition of O- acylation and C- acylation of phenols in Hoesch Reaction.