The present thesis entitled "Phytochemical Investigation of Some Indigenous Pesticidal Plants" incorporates with the isolation, purification, chemical degradation, spectroscopic analysis and pesticidal activity of isolated compounds from plant origin, which may potentially be explored as pesticidal agents. The work has been carried out on flowers of Nerium indicum Linn. (N.O. Apocynaceae) and Tridax procumbens Linn. (N.O. Compositae).

It consists of five chapters and a brief resume of each one is described below:

(I) CHAPTER-I : Introduction

This chapter deals with a brief account about pests, types of pests damages caused by them and role of pesticides in the destruction of pests. It includes about the role of indigenous plants in the control of pests and pesticidal agents obtained from plant origin. It also includes medicinal properties of two indigenous plants Nerium indicum Linn. and Tridax procumbens Linn. It also incorporates relevant updated bibliography.

(II) CHAPTER-II : Isolation and characterization of the novel triterpenoidal saponin; Kanerocin 3-O-β-D-glucopyranosyl (1→4)-O-α-L-arabinopyranosyl-(28→1)-β-D-glucopyranosyl ester from the flowers of Nerium indicum Linn.*

This chapter incorporates the isolation and study of the triterpenoidal saponin AS-I (yield 0.1566%), which analysed for molecular

* [This work has been published in Journal of the Institution of Chemists (INDIA), Vol. 76, Part-5, p. 160-162, (2004)].
formula C_{47}H_{74}O_{13}, m.p. 270-271°C and [M⁺] 910 (FABMS). It was obtained by column chromatography of the benzene soluble fraction of concentrated ethanolic extract of the flowers of *Nerium indicum* Linn.

The compound AS-I was identified by various colour reactions, chemical degradations, acid and enzymatic hydrolysis, along with spectroscopic studies as; Kanerocin 3-O-β-D-glucopyranosyl (1→4)-O-α-L-arabinopyranosyl (28→1)-β-D-glucopyranosyl ester.

(III) **CHAPTER-III :** Isolation and study of the cardenolide; Oleandrigenin-3-O-α-L-rhamnopyranoside from the flowers of *Nerium indicum* Linn.*

This chapter deals with the study of cardenolide AS-II (yield 0.7166%), which analysed for molecular formula C_{31}H_{56}O_{10}, m.p.178-180°C and [M⁺] 578 (FABMS). It was obtained by column chromatography of ethyl acetate soluble fraction of concentrated ethanolic extract of flowers of *Nerium indicum* Linn.

The compound AS-II was identified by various colour reactions, chemical degradation acid and enzymatic hydrolysis, along with spectroscopic studies as; Oleandrigenin-3-O-α-L-rhamnopyranoside.

* [This work has been accepted for publication in Journal of the Institution of Chemists (INDIA)].
(IV) CHAPTER-IV : Isolation and structural study of steroidal saponin; β-Sitosterol-3-O-β-D-xylopyranoside from the flowers of *Tridax Procumbens* Linn.*

This chapter includes isolation and study of the steroidal glycoside AS-III (yield 0.078%). It analysed for molecular formula C_{41}H_{68}O_{11}, m.p. 196-198°C and [M⁺] 546 (FABMS) and was obtained by column chromatography of methanol soluble part of concentrated ethanolic extract of flowers of *Tridax procumbens* Linn.

The compound AS-III was identified by various colour reactions, chemical degradations acid and enzymatic hydrolysis along with spectroscopic studies as; β-Sitosterol-3-O-β-D-xylopyranoside.

* [This work has been accepted for publication in *J. Chem. Sci.*, Vol. 117, No. 3, (2005) in Press].
CHAPTER-V: This chapter has been divided into three parts.

PART-(A): Isolation and structural study of the isoflavonoidal glycoside; Isoquercetin 7-O-β-D-glucopyranoside from the flowers of *Tridax procumbens* Linn.*

This part deals with the isolated and study of isoflavonoidal glycoside AS-IV (yield 0.0993%), molecular formula \( \text{C}_{21}\text{H}_{20}\text{O}_{12} \), m.p. 226-228°C and [M'] 464 (FABMS), which was obtained by the column chromatography of the ethyl acetate soluble fraction of the concentrated ethanolic extract of the flowers of *Tridax procumbens* Linn.

The compound AS-IV was identified by various colour reactions, chemical degradations, acid and enzymatic hydrolysis, along with spectroscopic studies as; Isoquercetin 7-O-β-D-glucopyranoside.

![Chemical Structure of AS-IV](image)

PART-B: Studies on the antifungal activity of the compounds AS-I, AS-II, AS-III and AS-IV.**

This part describes the antifungal activity of the compounds isolated from indigenous pesticidal plants. All the isolated compounds AS-I, AS-II,

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Department of Chemistry, Dr. H.S. Gour University Sagar
AS-III and AS-IV were screened for antifungal activity by filter paper disc method. DMF was used as solvent where as griseofulvin was used as standard antifungal agent.

PART-C: Studies on the insecticidal screening of the compounds AS-I, AS-II, AS-III and AS-IV.

This part describes the insecticidal screening of all the isolated compounds AS-I, AS-II, AS-III and AS-IV. The insecticidal activity was carried out by residual film method. Two common insect pests Sitophilus oryzae and Periplaneta americana were used as test insects to test the insecticidal activity. The natural insecticidal agents AS-I, AS-II and AS-III produced significant knockdown activity while compound AS-IV was found to be less active against both the insect pests.