REVIEW OF LITERATURE

A comprehensive review of literature is an essential part of any scientific investigation, its main functions are to determine the previous work done, assist in delineation of problem area, provide basis for theoretical framework, and provide an insight into methods and procedures to be used, suggest operational definitions of major concepts and to help for interpretation of findings. Review of literature is directly or indirectly relevant to the objectives of the study.

The anatomical and physicochemical studies of *Coccinia indica* was done by Hussain *et al.*, (2011) and observed the presence of tannins, steroids, flavonoids, glycosides, saponin, alkaloids, proteins, amino acids and acidic compounds.

Gunjan *et al.*, (2010) has made a review of pharmacognostical study of *Coccinia indica* and opined that fruit extract has significant anti diabetic properties.

Pharmacognostical studies of *Coccinia indica* was carried by Sutar *et al.*, (2010) and they detected the alkaloids, carbohydrates, glycosides, flavonoids, tannins and saponins.

Khatun *et al.*, (2012) has studied phytochemical screening and antimicrobial activity of *Coccinia cordifolia* and noticed the presence of compounds like flavonoids, saponins, tannins and terpenoids. The plant shows activity against *Shigella dysenteriae*, *Escherichia coli* and *Staphylococcus aureus*.

The antimicrobial activity of seed *Momordica charantia* was studied by Mahmood *et al.*, (2012) and noticed that aqueous seed extract shows antimicrobial activity against *Pseudomonas multocida*, *Salmonella typhi* and *L. bulgaricus* and ethanol seed extract showed significant antimicrobial activity against *S. aureus*, *M. luteus*, *E. coli* and *S. epidermidis* and *L. bulgaricus* and petroleum ether extract were effective against *S. aureus*.

Phytochemical analysis and antimicrobial activity of *Kedrostis foetidissima* was studied by Vasantha *et al.*, (2012) and detected presence of flavonoids and steroids in leaf extract. The flavonoids, tannins, triterpenoids, phenols, steroids, glycosides and cardiac glycosides was detected in the chloroform, methanol and acetone extract but saponin was detected only in methanol and acetone extract.
Experimental studies of anti-hepatotoxic effect of *Trichosanthes tricuspidata* by Vidyasagar (2012) revealed the presence of carbohydrates, proteins, alkaloids, glycosides and flavonoids which shows anti-hepatotoxic effect. In physico-chemical analysis they noticed that drugs were free of impurities like silica, carbonates, phosphates etc.

Poovendran *et al.*, (2011) has performed the antimicrobial assay of *Coccinia grandis* against *E. coli* and noticed that ethanol extract exhibit maximum activity whereas aqueous leaf extract and acetone extract does not show any antimicrobial activity.

Dhiman *et al.*, (2012) has enumerated some important plants of the family Cucurbitaceae plants are: *Momordica charantia*, *Cucurbita pepo*, *Cucurbita andreana*, *Cucurbita ficifolia*, *Cucumis sativus*, *Cucumis melo*, *Citrullus colocynthis*, *Luffa echinata*, *Trichosanthes kirilowili*, *Lagenaria siceraria*, *Benicasa hispida* etc.

The pharmacognostical review of *Coccinia grandis* was performed by Tamilselvan *et al.*, (2011) and noticed that presence of steroids in petroleum leaf extract and detected the compounds like tannins, glycoside, proteins, amino acid, saponins and alkaloids in studied extracts.

The Antibacterial activity of *Coccinia grandis* leaf extract in different organic solvents were studied by Sivaraj *et al.*, (2011) against some selected bacterial spp. and concluded that the ethanolic leaf extract exhibits maximum activity against *S. aureus*, *B. cereus*, *E. coli*, *E. pneumonia* and *S. pyrogens*.

Arawwawala *et al.*, (2011) has noticed antibacterial activity of *Trichosanthes cucumerina* in hot water extract and cold ethanolic extract against *Staphylococcus aureus*, *Streptococcus pyogenes*, *Escherichia coli* and *Pseudomonas aeruginosa* and observed that water extract showed significant activity against *S. aureus*, *S. pyogenes*, *E. coli*, *P. aeruginosa*. The cold water extract has higher antibacterial activity than the hot water extract.

Gopalakrishnan *et al.*, (2012) has performed antimicrobial activity of *Cucumis trigonus* fruits and observed that the petroleum ether and chloroform extracts does not show any activity while the ethanolic extract showed more activity than the benzene and aqueous extracts against *Candida albicans*, *Aspergillus flavans*, *Klebsiella aeruginosa*, *Pseudomonas aeruginosa* and *Bacillus subtilis*.

Bhattacharya *et al.*, (2010) has evaluated antifungal and antibacterial activity of
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Coccinia grandis and observed that the antifungal activity on Candida albicans and Aspergillus niger and antibacterial activity was observed on gram positive bacteria like Bacillus subtilis, Staphylococcus aureus, Escherichia coli and Salmonella typhi.

In vitro anti-oxidant and anti-inflammatory activity of Coccinia grandis was studied by Ashwini et al., (2012) and noticed that the ethanol and methanol extract has significant antioxidant property.

Antimicrobial activity and phytochemical screening of the fruit extracts of Coccinia indica was evaluated by Syed et al., (2009) and reveals that the presence of phytochemicals like alkaloid, steroid, tannins, saponins, phenols, glycosides, and triterpenoids. Petroleum ether extract was the most active and showed considerable antibacterial activity against all tested gram positive and gram negative bacteria. Least activity was in chloroform extract.

Photochemistry, Pharmacognosy and pharmacological study of Lagenaria siceraria was carried out by Kubde et al., (2010) and observed the fruit extract contain cucurbitacins, showing antioxidant activity.

Rastogi and Malhotra (1991) and Duvey et al., (2012) has observed that Trichosanthes tricuspidata contains Cucurbitacins as an active ingredient and enumerated its medicinal uses.

Khare (2007) noticed that Trichosanthes tricuspidata contain Cucurbitacins, it possess anti-tumor, anti-inflammatory, anti- asthmatic, anti-fertility, anti-microbial and anti-hermitic properties.

Phytopharmacological review of Lagenaria siceraria was undertaken by Shah et al., (2010). The phytochemical study shows bitter fruit contains cucurbitacins B, D, G and H. The leaves contain cucurbitacins B, D, and traces of E. fruit having anti hyperlipidemic, analgesic and anti-inflammatory, diuretic, antioxidant activity.

Deore et al., (2009) were studied in vitro antioxidant activity and quantitative estimation of phenolic content of Lagenaria siceraria. Phytochemical screening of the crude ethanolic extract of fruit revealed the presence of flavonoids, saponins, glycosides and phenolic compounds which bears antioxidant activity.
Erasto and Mbwambo (2009) made HPTLC profile of *Lagenaria siceraria* fruits and noticed that it has high DPPH radical scavenging effect at all concentrations. The ethyl acetate extract shows more activity than rest of the samples.

Pawar *et al.*, (2009) were evaluated central nervous system activity of different leaf extracts of *Lagenaria siceraria*. In their study, three extracts of leaves, petroleum ether, chloroform and methanol were used to study the CNS depressant activity in several animal models. In phytochemical screening the flavonoids, steroid, alkaloid, tannin, and saponin were detected.

Nutritive value of *Lagenaria sphaerice* seed from south Eastern Nigeria was studied by Chinyere *et al.*, (2009).

The antibacterial activities of *Coccinia grandis* was evaluated by Farrukh *et al.*, (2008) and noticed that water extract of leaves and ethanol extract of stem showed high activity against *Shigella boydi* and *Pseudomonas aeruginosa* respectively.

Tomori *et al.*, (2007) were evaluated the antibacterial activity of ethanolic fruit extract of *Lagenaria breviflora*. Tang *et al.*, (2010) observed antimicrobial activity of sphingolipids isolated from stems of Cucumber (*Cucumis sativus*).

The change in mineral contents in fruit occurs due to infection of rot fungal pathogens in ivy gourd (*Coccinia indica*) which results in reducing the nutritional value Chatage and Bhale (2012).

Modgil *et al.*, (2004) were determined carbohydrate and mineral content of Chyton (*Sechium edule*) and *Lagenaria siceraria*. Both plants were analyzed for their carbohydrate content viz, crude fiber, reducing sugar, non-reducing sugar and different dietary fiber constituents like NDE, ADF, legine, Cellulose and hemicelluloses and minerals.

Hossain *et al.*, (2012) were evaluated anti-inflammatory activity and determination of total flavonoids and tannin contents of *Lagenaria siceraria* root.

The phytochemical screening and antimicrobial activity of *Cucurbita pepo* was carried out by Chonoko and Rufai (2011).
Dewanjee et al., (2007) has studied antimicrobial activity of crude extract from *Coccinia grandis* and noticed that they are active against selected micro-organisms.

Bajpai et al., (2012) has performed HPTLC of *Cucurbita maxima* seed and observed that the presence of steroids, carbohydrates, unsaturated fatty acids and saturated fatty acids in the seed extract.

Phytochemical investigation of seed of *Cucumis callosus* was done by Chand et al., (2012), and noticed the presence of alkaloids, proteins, carbohydrates, flavonoids, glycosides, saponins and tannins in alcohol and water extracts.

The nutritive and medicinal property of Cucurbits were recorded by Rahman et al., (2008) and observed that the cultivated cucurbits are the good sources of vitamins and minerals.

Kirtikar and Basu (1987) reported that *Diplocyclos palmatus* was distributed throughout India, the annual climber with bright red fruit have high medicinal value.

Chopra and Chopra (1956) reported that *Diplocyclos palmatus* is used as an antidote against snake bite and inflammation.

Gupta and Wagh (2014) has studied phytochemistry, pharmacology and folklore use of *Diplocyclos palmatus* and noticed the presence of alkaloids, flavonoids, tritpenoids, saponins, steroids, proteins and resins. The plant has anti-inflammatory properties.

Saboo et al., (2013) were evaluated phytochemical detection and anticancer potential of chloroform root extract of *Trichosanthes tricuspidata*.

Deshpande et al., (2008) were evaluated the ethanolic fruit extract of *Lagenaria siceraria* against the disorders where free radicals play a major role in pathogenesis.

The above review reveals that the selected medicinal plants have attracted the attention of workers of pharmacognosy for quite long time. Many investigations in the diverse disciplines have also been undertaken. Pharmacognosy and phytochemistry has also been studied in large measure. But the ethno medicinal uses with phytochemical
screening along with pharmacognostical studies occurring variations thereof, to develop a binding interest in the alliance, this work was, therefore, undertaken.

The data adduced through the following pages justifies this effort. In the thesis a study of phytochemistry, pharmacognosy and antimicrobial assay of 05 plants of family Cucurbitaceae is presented. In addition, assay of selected plants has also been performed for the confirmation of ethnomedicinal claims of rustics of the region. A discussion of phytochemistry, pharmacognosy and antimicrobial assay is undertaken in light of the present study and in reference to pertinent earlier literature, and conclusion, as reasonably as can be arrived at, are drawn.