REVIEW OF LITERATURE

Plants selected for the present research work are having medicinally significant value and many of them possess active phytochemical constituents. These selected plants are *Allium cepa* L., *Celastrus paniculatus* L., *Curcuma longa* L., *Cuminum cyminum* L., *Leucas aspera* (wild) and *Nigella sativa* L. The reviews of the above plants are briefed as follows:

**Ignacimuthu et al., (2008)** studied the larvicidal activity of *Leucas aspera* against *Culex quinquefasciatus* and *Aedes aegypti*. The hexane extract of *L. aspera* showed highest activity followed by choloform and ethanol. The LC\(_{50}\) values of *L. aspera* against first, second, third and fourth instar larvae of Culex 122.50, 149.97, 193.43 and 230.71 ppm and against Aedes the LC\(_{50}\) values were 77.40, 144, 199.72 and 257.17 ppm respectively. The results were statistically significant at P<0.05 level.

**Ilango et al., (2008)** studied the antibacterial activity of *Leucas aspera* spreng. In this study, the whole plant of *Leucas aspera* was first defatted with hexane and discarded. Then the remaining marc was successively extracted with ethyl acetate and methanol and both the extract were concentrated under vacuum to yield corresponding ethyl acetate extract (EAE) and methanolic extract (ME). Both the extracts exhibited a significant antibacterial activity against all the screened microorganisms.

**Mangathayaru et al., (2005)** investigated the Antimicrobial activity of *Leucas aspera* flowers. The methanol extract of *Leucas aspera* flowers, its fractions, the alkaloidal residue and the expressed flower juice, tested for antimicrobial activity, showed good antibacterial activity for methanol extract and methanol fraction with maximum activity for the alkaloidal residue.

**Shirish S. Pingale (2010)** investigated the Hatoprotection by fresh juice of *Leucas Aspera* leaves. The aim of the present work is to evaluate the effect of *Leucas aspera* leaves fresh juice against carbon tetrachloride (CCl4) induced liver damage. The observation of markers as well as Light and electron microscope photographs supports the regeneration of liver parenchyma. This proves overall promising effect against liver disorders.
Gopal et al., (2010) studied the Antioxidant properties of a novel flavonoid from leaves of Leucas aspera. The crude methanol extract of Leucas aspera leaves showed strong 1,2-diphenyl-2-picrylhydrazyl (DDPH) and superoxide radical-scavenging activities compared to other polarity-based extracted fractions. These results demonstrate the antioxidant potency of leucasin which could be the basis for its alleged health-promoting potential.

Rahman et al., (2007) studied Preliminary antinociceptive, antioxidant and cytotoxic activities of Leucas aspera root. The extract showed significant lethality to brine shrimp with an LC\textsubscript{50} value.

Sukumar et al., (2007) investigated the RBC membrane stablisation in an in vitro method by the drug isolated from Leucas aspera. The isolated compounds have been duly characterized by chromatographic and hydrolytic study as well as by UV spectral means. The membrane interaction of albino rat RBC with isolated Leucas aspera flavonoids by an in vitro method has been studied.

Emi Okuyama et al., (2006) studied about the Diterpenes from Leucas aspera, inhibiting Prostaglandin-Induced contractions. Investigation of the inhibitory fraction of Leucas aspera on prostaglandin-induced contraction in guinea pig ileum provided four new diterpenes, leucasperones A (1) and B (2) and leucasperols A (3) and B (4), and three new isopimarane glycosides, leucasperosides A, B, and C (5–7), together with the known compounds asperphenamate, maslinic acid, (−)-isololiolide, and linifolioside. The structures of the compounds were determined by detailed spectroscopic analysis. The configurations of 1 and 2 and the acetylated derivatives of 3 and 4 were determined by differential NOE analysis and CD data. Leucasperone A (1), leucasperosides A (5) and B (6), and linifolioside showed inhibition of prostaglandin-induced contractions.

Mangathayaru et al., (2005) studied the effect of Leucas aspera on hepatotoxicity in rats. Swiss albino mice were used for toxicity study, while the hepatoprotective study was carried out in adult male Wistar rats (150-200 g). One-tenth of the maximum tested dose (i.e., 200 mg/kg, p.o.) of the extract was selected for the evaluation of antihapatotoxic activity.
Saundane et al., (2000) investigated the Anti inflammatory and Analgesic activity of various extracts of *Leucas aspera* Spreng. Four different crude extracts- petroleum ether, chloroform, ethanol and water of *Leucas aspera* Spreng were investigated for antiinflammatory and analgesic activities in albino rats and mice, respectively at a dose of 400 mg/kg body weight, orally.

Kannappa Reddy et al., (1992) studied the anti-ulcer activity of *Leucas aspera* spreng. The alcoholic extract of *Leucas aspera* (ALA) was investigated for its antiulcer effect by two experimental models. A significant reduction in acid secretion and ulcer score was observed in rats after ALA treatment. The observed antiulcer effect of ALA may be due to a combination of anti secretary effect and a protective effect on gastric mucosa.

Bagavan et al., (2008) studied the Larvicidal activity of saponin from *Achyranthes aspera*. The acetone, chloroform, ethyl acetate, hexane and methanol leaf extracts of *Acalypha indica*, *Achyranthes aspera*, *Leucas aspera*, *Morinda tinctoria* and *Ocimum sanctum* were studied against the early fourth-instar larvae of *Aedes aegypti* L and *Culex quinquefasciatus*. This study investigates the potential of crude extracts from commonly used medical herbs in India as an environmentally safe measure to control the vector of dengue and lymphatic filariasis.

Elumalai et al., (2009) showed that *Achyranthes aspera* leaf extracts inhibited fungal growth. The aim of the study was to investigate the antifungal activity of various leaves extracts of *Achyranthes aspera* Linn. The results obtained in the present study suggest that the ethanol and methanol extracts of the leaves of *Achyranthes aspera* Linn revealed a significant scope to develop a novel broad spectrum of antifungal herbal formulation.

Triguna N. Misra et al., (1992) extracted an Antifungal essential oil and a long chain alcohol from *Achyranthes aspera*. An essential oil and a new long chain alcohol have been isolated from the shoots of *Achyranthes aspera*. The oil exhibited antifungal activity against *Aspergillus carneus* and the isolated alcohol has been characterized as 17-pentatriacontanol.

Anshu Aggarwal et al., (2010) studied the Reduction of oxalate-induced renal tubular epithelial (NRK-52E) cell injury and inhibition of calcium oxalate crystallisation in vitro by
aqueous extract of *Achyranthes aspera*. These studies indicate that *A. aspera* extract besides having a cytoprotective role also has a potential to inhibit both nucleation and the growth of the CaOx crystals and can prove to be a potent candidate for phytotherapy against urolithiasis.

Vasudeva et al., (2007) investigated the Estrogenic and pregnancy interceptory effects of *Achyranthes aspera* Linn. Root. *Achyranthes aspera* Linn. (Amaranthaceae) is an abundant indigenous herb in India. Histological studies of the uterus were carried out to confirm this estrogenic activity.

Vasudeva Rao et al., (2006) studied the Effect of *Achyranthes aspera* on the immunity and survival of *Labeo rohita* infected with *Aeromonas hydrophila*. *Achyranthes aspera* seed was incorporated in the diets (at 0.01%, 0.1% and 0.5%) of *Labeo rohita*, rohu fingerlings (3.0 ± 0.4 g). These results indicate that *Achyranthes aspera* stimulates immunity and increases resistance to infection in *L. rohita*.

Vasudeva et al., (2006) studied the Post-coital antifertility activity of *Achyranthes aspera* Linn. root. *Achyranthes aspera* Linn. (Amaranthaceae) is an abundant indigenous herb in India. It is traditionally being used as an abortifacient. The ethanol extract also exhibited estrogenic activity tested in immature ovariectomised female albino rats. Histological studies were carried out to confirm this.

Vasudeva Rao et al., (2004) observed the enhancement of anti-proteases in *Labeo rohita* fed with diet containing herbal ingredients. Aqueous root extract of *Achyranthes aspera* was incorporated in the experimental diet of *Labeo rohita* (rohu). Control diet was prepared without root extract. Feeding of fishes with experimental diet has significantly (p<0.05) enhanced the serum anti-proteases level than fishes fed with control diet.

Vasudeva Rao et al (2005) studied that dietary incorporation of *Achyranthes aspera* seed influences the immunity of common carp *Cyprinus carpio*. *Achyranthes aspera* seed (0.5%) was incorporated in the diet for *Cyprinus carpio* (90±17g; 17g): control diet was prepared without the seed of Achyranthes. All these results confirm that *Acharyanthes aspera* enhances the immunity of *Cyprinus carplo*. 
Vetriichelvan et al., (2003) investigated the Effect of alcohol extract of *Achyranthes aspera* Linn. on acute and subacute inflammation. The antiinflammatory activity of an alcohol extract of *Achyranthes aspera* was tested on carrageenin-induced hind paw oedema and cotton pellet granuloma models in albino male rats.

Sandhya kumary et al., (2002) studied the Impact of feeding ethanolic extracts of *Achyranthes aspera* on reproductive functions in male rats. The results suggest that ethanolic extract of *A. aspera* caused reproductive toxicity in male rats and the action may be by suppressing the synthesis of androgen.

Pankaj Tahiliani et al., (2000) studied that *Achyranthes aspera* elevates thyroid hormone levels and decreases hepatic lipid peroxidation in male rats. A study was made to evaluate the role of *Achyranthes aspera* on the changes in serum thyroid hormone concentrations and glucose levels in male rats.

Sharma et al., (1999) investigated the form and function of *Achyranthes aspera* Linn. under air pollution stress. Air pollutants emitted from the Badarpur coal-fired power station New Delhi, influenced the form and function of *Achyranthes aspera*, a perennial weed of the family Amaranthaceae. Chlorosis and necrosis were common foliar symptoms. Morphological features such as root length, shoot length, plant height, number of leaves and the biomass showed little variation; leaf size, however, increased considerably under the pollution.

Muhammad Shoib Akhtar et al., (1991) investigated the hypoglycaemic effect of *Achyranthes aspera* in normal and alloxan-diabetic rabbits. Blood glucose levels of normal and alloxan diabetic rabbits were determined after oral administration of various doses of *Achyranthes aspera* powdered whole plant and certain aqueous and methanolic extracts.

Pakrashi et al., (1977) studied the Abortifacient principle of *Achyranthes aspera* Linn. *Achyranthes aspera* is an abundant indigenous herb in India. Extracts of the whole plant had shown an abortifacient effect in mice.

Kannapa Reddy et al., (1986) studied the Effect of *Leucas aspera* on experimental inflammation and mast cell degranulation. The aqueous and alcoholic extracts of Leucas
aspera were investigated for their action on experimental inflammation and on mast cell degranuation. Both the extracts exhibited significant anti inflammatory action of acute and chronic inflammation. The mast cell degranulation induced by propranolol and Carbachol was effectively prevented by pretreatment with *Leucas aspera* extracts.