1. LITERATURE REVIEW

1. Akilandeswari et al., (2001) studied anti inflammatory activity of leaf extracts of *Justicia tranquibariensis*. Ethanolic extract of the plant showed significant anti inflammatory activity when compared to the standard drug sample.

2. Akilandeswari et al., (2001) reported Photochemical studies of leaf of the herbs *Justicia tranquibariensis* (Acanthaceae) carried out in the presence of phytosterols, flavonoids, Glycosides and absence of triterpenoids, alkaloids, saponins tannins have been reported in this herb for the first time. The Phytosterols flavonoids are present in all the extracts. Glycosides are present in Benzene, Acetone and Aqueous extract. Saponins. Tannins triterpenoids are absent in all four extracts.

3. Akash et al., (2013) studied on invitro anti cancer activity and xanthine oxidase inhibitory properties of *Justicia beddomei*. In the present study the *in vitro* anticancer and xanthine oxidase inhibitory (XOI) activity was investigated. The dried aerial parts of *J. beddomei* were successively extracted with methanol. The extract was subjected to MTT colorimetric assay in HeLa and MCF-7 cell lines and its xanthine oxidase inhibitory activity determined by using standard allopurinol. The results obtained in the present study indicate that the methanolic extract of *J. beddomei* contains phytochemicals which has anticancer and XOI activities.

4. Alagesaboothi., (2013) reported ethnomedicinal plants used for the treatment of snake bites by malayali tribals and rural people in Salem district, Tamilnadu, India. The author has conducted an interview of total informants. The highest number of medicinal plants came from Acanthaceae. The investigation revealed some unknown uses of medicinal plants. The biological name, family, local name, plant part used are provided here for the treatment of snake bite.

5. Alagesaboopathi., (2014) studied on herbal treats practiced by tribal and rural population in Arunoothimalai hills of salem district, Tamilnadu, India. In the present study medicinal plants used by malayalis and rural people are listed with scientific name, family, vernacular name, plant parts used, method of drug preparation etc. The indigenous information of medicinal plants has
important potential for research and the discovery of modern medicine. The study reveals leaves of *Adathoda vasica* mixed with hot water and taken internally to treat cough, cold, fever and asthma.

6. **Balamurugan** et al., reported preliminary phytochemical screening, free radical scavenging and anti microbial activities of *Justicia tranquibariensis*. The extracts were subjected to anti bacterial, anti fungal activity screening by agar diffusion method. Minimum inhibitory concentration required for cessation of microbial growth was evaluated by agar streak dilution method. Preliminary phytochemical screening was performed and different phytococstiutents present in the extract were identified.

7. **Biju john** et al., (2013) reported total phenolics and flavonoids in selected *Justicia* species. The results showed that the different parts of the selected *Justicia* species contain significant amount of phenolics and flavonoids. The highest phenolic content was showed by the leaf of *J.adathoda* (38.75mg GAE) and the least phenolica were observed for the root of *J.beddomei* (22.65mg GAE).

8. **Geone** et al., (2012). Chemical constituents and biological activities of *Justicia*. The present study provides a review addressing the chemistry and pharmacology of the genus *Justicia*. In addition the biological activities of compounds isolated from the genus also covered. The chemical and pharmacological information in the present work may inspire new biomedical applications for the species of *Justicia*, considering atom economy, the synthesis of environmentally benign products without producing toxic by-products, the use of renewable sources of raw materials, and the search for processes with maximal efficiency of energy.

9. **Gupta** et al., (2013) reported Pharmacognostical study of *Justicia adathoda* Linn. Leaf. The macroscopy, microscopy, quantitative analysis, extactive values in ethanol and water, physiochemical screening and TLC of the leaf were investigated. Alkaloids, glycosides, steroids, triterpenes and resin were present in both extracts while saponin as present only in aqueous extract.
10. **Juan** et al., reported on chemistry and pharmacology of selected Asian and American medicinal species of *Justicia*. They concluded *Justicia* as one of the biggest and complex genus among Acanthaceae family, constituted around 600 and 700 species in the world, two hundred of these species grow in America, on the other side Asian species like *Justicia procumbens* or *Justicia adathoda* have been deeply studied showing interesting properties as anti viral, cytotoxic and bronchodilator activity attributed mainly to alkaloids, lignans and flavonoids.

11. **K.P Sampath Kumar** et al., (2010) studied on Indian traditional herbs *Adathoda vasica* and its medicinal application. They reported that vasaka is beneficial in bronchitis, removal of intestinal parasites, treating cold, cough, asthma. It liquifies sputum so that it is brought up more easily. Vasicine, oxyvasicine and vasicinone are the alkaloids present in vasaca and in which vasicine is the active ingredient for expelling sputum from the body.

12. **Kavitha** et al., (2014) reported phytochemical and phytopharmacological profile of *Justicia gendarussa* Burm . F . a wide variety of active constituents such as flavonoids, alkaloids, steroids, terpenoids, saponins etc. The plant exhibits various important pharmacological properties also.

13. **Karunakar** et al., (2014) reported investigation on the cytotoxicity of green synthesis and characterization of silver nano particles using *Justicia adathoda* leaves on human epitheloid carcinoma cells and evaluation of their antibacterial activity. In the present study, we report biosynthesis of silver nanoparticles using silver nitrate and the leaves extract of the plant *Justicia adhatoda* which acts as a reducing agent. Formation of nanoparticles was indicated by a color change from pale yellow to reddish brown. Characterization studies were done using UV Spectrophotometer and FTIR. The antibacterial activity of the synthesized silver nanoparticles was studied against different bacterial species and was found to be highly toxic.

14. **Linu Mathew** et al., (2012) reported development of salinity resistant somaclones of *Justicia adathoda* which is an important medicinal plant with bronchodilatory effect. Sodium chloride tolerant calli of *J. adhatoda* was obtained by exposing the callus to increasing concentration of Sodium chloride, 5.0mM- 100mM, in Murashige-Skoog medium for 30 days. The tolerant calli were grown better than the sensitive calli in 5.0mM-32mM concentration of Sodium chloride.
tested. Above 32mM Sodium chloride callus growth was inhibited. The growth behaviour, plantlet production and alkaloid production of the survived calli were characterised and compared with those of wild type plants.

15. Muniappan Ayyanar., (2012) reported Indian medicinal plants as a source of therapeutic agents. The present communication constitutes a review on the medicinal properties, major phytochemical constituents and pharmacological activities of some of the common medicinal plants used in Indian traditional medicine.

16. Nilima et al.,(2012) reported on Evaluation of free radical scavenging activity of Justicia adathoda: A gamma radiation study. In this sample was irradiated in Co – 60 irradiator (gamma chamber 900) at dose 1, 2, 3, 5 and 10khy at ambient temperature. The effect of radiation on the methanol extract was investigated by different assays.

17. Noor et al., (2012) reported chick chorioallantoic membrane (CAM) assay as an invivo model to study the effect of newly identified molecules on ovarian cancer invasion and metastasis. CAM assays have been widely used to study angiogenesis and tumor invasion of colorectal, prostate and brain cancers. However, there have been limited studies that have used CAM assays to assess ovarian cancer invasion and metastasis. We have therefore developed a CAM assay protocol to monitor the metastatic properties of ovarian cancer cells (OVCAR-3, SKOV-3 and OV-90) and to study the effect of potential therapeutic molecules in vivo. Results demonstrate that the CAM assay is a robust and cost effective model to study ovarian cancer cell metastasis.

18. Radhika et al., reported cardioprotective role of Justicia tranquibariensis leaf extract in isoproterenol induced myocardial infarction in albino rats. Oral administration of aqueous extracts of Justicia tranquibariensis proved the protective role of the plant.

19. Rahul Chavan et al., (2013) reported anti viral activity of Indian Medicinal Plant Justicia adathoda against Herpes simplex virus: An invitro study. The aqueous and methanol extract from leaves of Justicia adathoda , were used to study the cytotoxicity effect on vero cell line by using MTT assay. The results suggest that the herbal extract has potent anti viral agents against
herpes simplex viruses that can be exploited for development of an alternative remedy of HSV infections.

20. Raji et al., (2014) reported invitro morphogenesis and RAPD analysis of *Justicia tranquibariensis* L.F. The results suggested that the multiple shoot induction and regeneration were regulated by appropriate cytokinin/auxin ratios rather than their relative concentrations. High multiplication frequency and molecular stability ensures efficacy of the protocol developed for production and conservation of this important medicinal herb.

21. Rashmi et al., (2012) studied on isolation and characterisation of vasicine from invitro cultures of *Justicia adathoda*. In the present study isolation and characterisation of alkaloids from callus and suspension cultures of *Justicia adathoda* was performed. Alkaloids were extracted, quantified and identified by color reactions Thin layer chromatograms (TLC), High performance liquid chromatogram (HPLC) and Fourier transform infrared spectroscopy (FT-IR) using vasicine as standard.

22. Rashmi P A et al., (2012) studied on anti microbial activity of leaf extracts of *Justicia adathoda* L. in comparison with vasicine. The present study revealed the *J. adathoda* has broad spectrum of anti microbial activity and a potential source of anti microbial agents that could be useful for chemotherapy and control of infectious diseases.

23. Revathy et al., (2013) reported ethnomedicinal plants and novel formulations used by Hooralis tribe in Sathyamangalam forests, Western ghats of Tamilnadu, India. An ethnobotanical survey was carried out in Vilangombai village, Sathyamangalam forest division, from november 2011 to january 2012. The plants with desirable data obtained in the present study are suggested for evaluating further research and searching new drugs.

24. Sandeep Dhankar et al., (2011) studied on A review on *Justicia adathoda*: A potential source of natural medicine. The present communication constitutes a review on the medicinal properties, ethnomedicinal uses, phytochemistry, pharmacological activities, pharmacokinetic and toxicity of an Indian medicinal plant, *Justicia adathoda*. 
25. **Saritha et al.,** (2013) reported a review on ethnopharmacognosy of *Justicia tranquebariensis*. ‘Sivanarvembu’ is one such drug of doubtful origin in Siddha system of medicine. ‘*Justicia tranquebariensis* L.’ belonging to the family Acanthaceae one of the sources of sivanarvembu is reviewed from ethnopharmacognostic view and presented in this paper. In Tamil it is called as “Tavashoo moorunghie” or “Poonakapoondo”. The present paper deals with the literature available on the ethno botanical, pharmacognostic, phytochemical and pharmacological studies on ‘*Justicia tranquebariensis* L.’.

26. **Sayed ahmed et al.,** (2009) reported A phytopharmacological overview on *Adathoda zeylanica* Medic. Syn. *A. vasica* (Linn) Nees. The review reveals that wide range of phytochemical constituents have been isolated from the plant and it possesses important activities like antitussive, anti bacterial, abortifacient, anti inflammatory, anti ulcer, hypoglycemic, anti viral, hepatoprotective, anti mutagenic and anti oxidant properties.

27. **Senthamari et al.,** (2013) reported anti arthritic activity of *Justicia tranquebariensis* in the treatment of rheumatism. The ethanolic plant extract of *Cissus quadrangularis* and *Justicia tranquebariensis* was investigated to evaluate its anti-arthritic activity by Freund’s adjuvant induced arthritis model and the plant extracts significantly reduced the arthritis of the affected joint when compared with the controlled rats.

28. **Senthilkumar et al.,** (2006) reported some medicinal plants used by irular, the tribal people of Marudha malai hills, Coimbatore, Tamilnadu. Paper dealt with ethnobotanical study on 75 plant species and for several common diseases like scabies, skin allergies, diabetes, headache, ear ache, jaundice, leucoderma, dysentry etc by the irulars.

29. **Shabana et al.,** (2008) reported anti bacterial activity of leaves of *Justicia tranquebariensis*. The extracts were found to have strong anti bacterial activity against a range of bacteria. The antibacterial activity of *Justicia tranquebariensis* was determined against 10 bacterial strains. The anti bacterial activity was observed in dose dependent manner ie, 2.5mg/ml showed more level of activity than 5mg/ml against all the tested microorganisms.
30. **Shabana et al.,** (2011) reported protective and curative effects of *Justicia tranquibariensis* leaves in acetamenophen induced hepatotoxicity. The leaf extract at dosage of 500 and 1000 mg/kg exhibited significant protective effect against acetaminophen induced hepatotoxicity. *Justicia tranquibariensis* leaf extract significantly suppressed increase in plasma activities of AST, ALT, ALP and TB concentrations which confirmed its curative and protective effect.

31. **Sindhu et al.**, (2012) reported survey of medicinal plants in Chennimalai hills, Erode district, Tamilnadu. Intensive field surveys have been carried out to document the promising medicinal plants and an inventory of 50 medicinal plants was prepared. The present study emphasizes need to survey the locally available medicinal flora and their conservation for future generation.

32. **Suriyavathana M** et al., reported the invtro antioxidant profile of *Justicia tranquibariensis* (2011). It was found that ethanolic extract of *Justicia tranquibariensis* showed potent antioxidant and free radical scavenging activity.

33. **Syed Naqvi et al.,** (2013) studied on phenolic acid content, anti oxidant properties and anti bacterial potential of flowers and fruits from selected Pakistani indigenous medicinal plants. HPLC analysis of *Justicia adathoda* flower and fruit showed a broad profile of phenolic acid such as p- hydroxy benzoic acid, syringic acid, gallic acid etc. the plant also exhibited good anti bacterial potential.

34. **Velpandian et al.,** (2014) reported the use of *Justicia tranquibariensis* in the management of bronchial asthma. The present study suugested a treatment trial with *Justicia tranquibariensis* for asthma. The herbal juice has proven to lower symptom scores and improve lung function. Further large scale, trials are needed to further evaluate the efficacy of the drug.

35. **Vishnu et al.,** (2012) reported insilico studies of *Justicia adathoda, Ocimum sanctum* plant compound as mycobacterium tuberculosis FTSZ inhibitors. Protein ligand docking analysis was carried out using autodock Vina on 61 compounds from two different plants.
36. **Wangkhen Sandhya** et al., (2014) reported that leaf and flower of plant *Justicia adathoda* Linn. Which is used as a medicine by the local folk of Manipur were assessed for its phyto chemical components and was found to have significant amount of carbohydrate, protein, total phenolics, flavonoids and alkaloids.

37. **Zahidah** et al., (2014) reported cytotoxic activities against breast cancer cells of local *Justicia gendarussa* crude extracts. The effects of kaempferol and naringenin from leaf extracts were examined on breast cancer cell lines (MDA-MB-231 and MDA-MB-468) using MTT assay. Leaf extract from Mersing showed high cytotoxicity against MDA-MB-468 and MDA-MB-231 with IC50 values of 23 μg/mL and 40 μg/mL, respectively, compared to other leaf extracts. Kaempferol possessed high cytotoxicity against MDA-MB-468 and MDA-MB-231 with IC50 values of 23 μg/mL and 34 μg/mL, respectively.

38. **Lilybeth** et al., (2013) reported brine shrimp lethality assay of ethanolic extracts of three selected species of medicinal plants from lligan city, Philippines. The present study was conducted to test for in vivo Brine Shrimp Lethality Assay (BSLA) of the ethanolic extracts of *Lantana camara*, *Chromolaena odorata*, and *Euphorbia hirta* and correlate cytotoxicity results with known pharmacological activities of the plants. Results showed that the extracts of *L. camara*, *C. odorata*, and *E. hirta* were potent against the brine shrimp with LC50 values of 55, 10, and 100 ppm (μg/mL), respectively. It indicated that bioactive components are present in these plants that could be accounted for its pharmacological effects.

39. **Sanjay** et al., (2009) reported invitro cytotoxicity activity of *Semecarpus anacardium* extract against Hep 2 cell line and Vero cell line. The Nuts of *Semecarpus anacardium* methanolic Extract was tested for its inhibitory effect in 96 micro plate formats against Hep 2 Cell Line. The percentage viability of the cell line was carried out by using Trypan blue dye exclusion method. The cytotoxicity of *Semecarpus anacardium* on Hep 2 cell was evaluated by the SRB assay. Cyclophosphamid was used as positive control. IC50 value of *Semecarpus anacardium* on Vero cell was not found and R2 value 0.008 by SRB assay.