1. LITERATURE REVIEW

A. VITEX NEGUNDO LINN.

Chowdhury et. al.,¹(2009) evaluated Antibacterial and cytotoxic activity screening of leaf extracts of *Vitex negundo* (Fam: *Verbenaceae*) The four fractions were assayed for antimicrobial screening and all the fractions showed most prominent zone of inhibition against a number of bacterial and fungal strains. Especially in comparison to the standard Kanamycin, all fractions gave prominent zone of inhibition against *Bacillus subtilis, Bacillus megaterium, Salmonella typhi, Vibrio mimicus* and a fungal strain, *Aspergillus niger*.

Pradeep Singh et. al.,²(2009) studied anti-inflammatory activity of ethanolic extract of roots of *Vitex negundo*. The result obtained showed that the ethanolic extract at a dose level of 500 mg/kg p.o. exhibited remarkable anti-inflammatory activity in both models, comparable to the standard reference drug Indomethacin.

Vishal R. Tandon et. al.,³(2008) studied Hepatoprotective (HP) activity of *Vitex negundo* (VN) leaf ethanolic extract was investigated against hepatotoxicity (HT). The result indicate HP effect of V. negundo leaf ethanolic extract was evident in the doses of 250 and 500 mg/kg as there was a significant decrease in TB, AST, ALT and ALP levels in comparison to control. Histology of the liver section of the animals treated with the V. negundo leaf ethanolic extract in the doses of 250 and 500 mg/kg further confirms the HP activity.

M.I. Alam, and A. Gomes ⁴(2003) studied the methanolic root extracts of *Vitex negundo* Linn. and *Emblica officinalis* Gaertn. were explored for the first time for antispase venom activity. The result indicate no precipitating bands were observed between the plant extract and snake venom. The above observations confirmed that the plant extracts possess potent snake venom neutralizing capacity and need further investigation.

Dharmasiri MG et. al.,⁵(2003) evaluated Anti-inflammatory, analgesic and antihistamine properties of mature fresh leaves of *Vitex negundo* L. (Verbenaceae) These observations revealed that the fresh leaves of *Vitex negundo* have anti-inflammatory and pain suppressing activities possibly mediated via PG synthesis inhibition, antihistamine, membrane stabilising and antioxidant activities. The antihistamine activity can produce the anti-itching effect claimed in Ayurveda medicine.
Tandon VR and Gupta RK (2005) reported that Vitex negundo L. leaf extracts showed anticonvulsant activity against maximal electroshock seizures (MES) in albino rats and pentylenetetrazole (PTZ) induced seizures in albino mice. Showed 50% protection in clonic seizures and 24-hour mortality against PTZ induced seizures. It also decreased number and duration of convulsions significantly. Vitex negundo L. potentiated anticonvulsant activity of valporic acid.

Nair AM (1995) evaluated ethanolic extract of Vitex negundo L. showed antiallergic activity against immunologically induced degranulation of mast cells better than that with compound 40/80. The extract significantly inhibited both the initial and later sustained phases of tracheal contractions. The initial phase was primarily due to histamine release which was blocked by the extract (confirmed in guinea pig ileal studies). The latter phase was due to release of lipid mediators from arachidonic acid. Inhibition of the latter phase may be secondary to inhibition of arachidonic acid by the ethanolic extract.

Dayrit FM and Lagurin LG (1994) were reported isolation of four iridoids such as Lagundinin, agnuside, 21-P-hydroxy benzoyl mussaenosidic acid, 61-P-hydroxy benzoyl mussaenosidic acid, from pharmacologically active fraction of Vitex negundo.

B. Jatropha Curcas Linn

Esimone CO et al. (2009) formulated herbal ointment containing methanol leaf extract of Jatropha curcas L. and tested for pro-wound healing activities. The extract (0.5, 1.0. and 1.5 g) was incorporated into 10 g of a simple ointment base by melting and triturating to give three batches of the ointment formulation. Excision wound measuring about 177 mm2 was created on the albino rats placed in groups (n = 5) and the ointment applied topically on the wounded area which was measured at intervals of 3 days until epithelialization and complete wound closure. Blank ointment base and Gentamycin ointment (1 %) served as the control and standard treatments, respectively. Topical application of the methanol leaf extract of J. curcas incorporated into an ointment base on the excision wound in rats caused a significantly (P<0.05) higher rate of wound healing and reduced the epithelialization period in a dose–related manner. Application of the ointment batch containing the highest concentrations of J. curcas extract (1.5 g/10g ointment) showed the highest rate of wound closure reducing the epithelialization period to 14.8 days compared to the blank ointment treatment with epithelialization period of 18.8 days.
We conclude that formulating *J. curcas* extract as ointment is effective in wound care and should be explored in harnessing the potentials of the plant in the treatment of topical diseases.

**Matsuse IT and coworkers**\(^{10}\) (1999) examined the water extract of the branches of *Jatropha curcas* (Euphorbiaceae) tested for the inhibition of HIV-induced cytopathic effects in cultured cells, HIV-reverse transcriptase (RT) and HIV-protease (PR) enzymes. Inhibited strongly the HIV-induced cytopathic effects with low cytotoxicity.

**Nii-Ayi Ankrash et al.,**\(^{11}\) (2003) evaluated efficacy and safety of a herbal medicine used for the treatment of Malaria. In addition male and female Sprague Dawley rats were used to evaluate the acute and sub-chronic toxicity effects of AM-1. The AM-1 eliminated malaria parasites (*Plasmodium falciparum* and *Plasmodium malarie*) from the peripheral blood of patients with malaria. In addition the AM-1 did not show any undesired effects in the patients as well as in laboratory rats.

**Muanaza DN et al.,**\(^{12}\) (1995) evaluated that Screening for anti-tumor and anti-HIV activities of nine medicinal plants from Zaire. The result indicate that methanol extract from *Jatropha curcas* was found to produce a moderate cytoprotective effect against HIV in cultured human lymphoblastoid CEM-SS cells.

**Gupta MP**\(^{13}\) (1996) reported that Screening of Panamanian medicinal plants for brine shrimp toxicity, crown gall tumor inhibition, cytotoxicity and DNA intercalation. The result indicated that methanolic extract of *Jatropha curcas* leaf was screen for brine shrimp toxicity, crown gall tumor inhibition, cytotoxicity and DNA interaction. It is most active in cytotoxicity and DNA interaction.

**Osoniyi O, and Onajobi F.**\(^{14}\) (2003) evaluated coagulant and anticoagulant activities in *Jatropha curcas* latex. The result showed that butanol fraction of latex of *Jatropha curcas* (further extracted with ethanol, ethyl acetate, aqueous) possess both procoagulation and anticoagulant activities former will being evident at high concentration of latex and while the latter is exhibited the lower concentration of the latex.

**Majumdar AM and co-workers**\(^{15}\) (2004) reported the anti-inflammatory activity of the Methanolic extract of *Jatropha curcas* against carrageen-induced rat paw oedema, It also shows activity against formalin induced rat paw edema, turpentine induced exudative changes and cotton pellet- induced granular tissue formation after oral treatment of 7 days.
Kalimuthu K. et al., 16 (2010) evaluated that antimicrobial activity of the biodiesel plant, *Jatropha curcas* L. As a measure of testing the medicinal properties of *Jatropha curcas*, methanol extract obtained from both *in vivo* leaf and leaf derived callus were subjected to antimicrobial activity against six microorganisms, of the six different concentrations tested, the *in vitro* leaf callus extracts of at high concentrations (1.0 and 1.2%) inhibited the growth of *Staphylococcus aureus* and *Pseudomonas sp.* At maximum extend (20 and 23mm diameter in inhibition) The antifungal activities of the leaf extract *in vivo* was noteworthy. However, the methanol extract of leaf derived callus of *Jatropha curcas* showed higher antifungal activity with concomitant increase in concentrations.

Shanti Bhushan Mishra, et al., 17 (2010) evaluated antidiabetic effect of *Jatropha curcas* L. leaves extract in normal and Alloxan-Induced Diabetic Rats. At the end of treatment, reduction in blood glucose level in treated rats with dose 250 mg/kg was 219.5, 116.5, (p< 0.001) and oral administration of 500 mg/kg of JCE on blood glucose level was found to be 237.0- 98.83, (p< 0.001). While in case of Glibenclamide 600µg/kg, the results was found to be 232.33, 94.5 mg/dl, (p< 0.001). Our results indicate that JCE have prominent antidiabetic effect in experimental diabetes and can therefore be used as an alternative remedy for the treatment of diabetes mellitus and its complications.

Jaikumar S et. al., 18 (2010) studied anti ulcer activity of methanolic extract of *Jatropha curcas* (Linn.) on Aspirin-induced gastric lesions in Wistar strain rats. The present study provides a strong evidence of antiulcer activity of JC extract against gastric lesions. The antiulcer activity is recognized by a reduction in acid-secretary parameters (i.e. total and free acid), gastric volume and ulcer score suggesting that acid inhibition accelerates ulcer healing, thereby strengthening of mucosal barrier.

Balaji R. et al., 19 (2009) evaluated hepatoprotective Activity of methanolic fraction of *Jatropha curcas* on Aflatoxin B1 Induced Hepatic Carcinoma. These results suggest that MFJC could protect liveragainst the AFB1-induced oxidative damage in rats, which may be due to its capability to induce the *invivo* antioxidant system.

Mujundar AM. et al.,20 (2000) Use of *Jatropha curcus* L. roots in the treatment of diarrhoea is a common ethnobotanical practice in Konkan, a part of the Western coastal area of India. Roots of this species were undertaken for pharmacognostic studies and evaluation of antidiarrhoeal
activity in albino mice. Successive solvent extraction was carried out using petroleum ether (60–80°C) and methanol. The methanol extract showed activity against castor oil induced diarrhoea and intraluminal accumulation of fluid. It also reduced gastrointestinal motility after charcoal meal administration in albino mice. The results indicate that action of *J. curcus* root methanol extract could be through a combination of inhibition of elevated prostaglandin biosynthesis and reduced propulsive movement of the small intestine.

**Dharmendra kumar et al.,**\(^{21}\) (2011) Obtained Biodiesel by transesterification of *Jatropha curcus* oil with anhydrous methanol, ethanol, and various mixtures of methanol/ethanol system. The present research work ultrasonic assisted transesterification of *J. curcus* oil was carried out in the presence of various mixtures of methanol/ethanol system and potassium hydroxide (KOH) as a catalyst, keeping the molar ratio of oil to alcohol 1:6. The methodology allows for the reaction to be run under atmospheric conditions. The ethanomethanolysis and ultrasonic mixing promote the rate of transesterification reaction due to the better solubility of oil with ethanol in reaction mixture and obtained methyl esters as well as ethyl esters.