LITERATURE REVIEW:

1. Andrade SF, *et al*., (2006), studied a plant used for folk medicines to treat inflammatory disorders, rheumatism was Austroplenckia populnes. There is a significant reduction (p<0.05) in dextran-induced rat paw edema in all groups. There is a significant decrease in the number of writhings (p<0.05) by 68.6%, 42.2%, 44.8% and 62.8% respectively in the hot-plate test. These results supported the folklore use to treat the above said disorders.

2. Balamurugan G, *et al*., (2009), used Indian medicinal plants to prepare a poly herbal extract and evaluated for anti-epileptic activity. The plant selected for the study are Bacopa monnieri (1500gms), Chlorophytum Borivillianum (1000gms), Curcuma longa (500gms) and Terminalia arjuna (400gms) extracted with water for 72 hours in a Soxhlet Apparatus. The dried extract was suspended in 5% CMC for animal administration. Up to 2000mg/kg/b.w the extract produce no toxic effects. Those dependent carried out with 250 and 500mg/kg/b.w P.O. Phenytoin (20mg/kg) was taken as standard PHE 500mg/kg body weight showed significant anti-epileptic activity than PHE 250 mg/kg dose. Levels of Dopamine, Serotonin and Noradrenaline were also estimated.

3. Nikunjana A. Patel *et al*., (2011), prepared a gel formulation using different concentration of the extracts of herbs mentioned below, which are known for their wound healing, anti-inflammatory, antioxidant and anti-bacterial activities using carbopol 934 gel. To analyze some active constituents present in the herbs HPTLC analysis was carried out. The formulations of 1% and 2% herbal extracts containing three times a day to open wound for 24 days post operatively and compared with base control. The study reveals that extract treated animals showed faster healing property than compared with control and with increase in concentration of extract in the formulation the wound concentration increases. HPTLC studies of extracts showed the presence of selected active constituents in significant amount. The $R_f$ values were similar to standard $R_f$ values.

Results proved that the evaluated activities tested showed positive response may be because of presence of flavanoids, phenols and saponins.

5. Alam K, et al, (2011), studied ethanolic and aqueous extracts of ammomum subulatum fruit was evaluated for anti-inflammatory activity. Dose of 100mg/kg and 200mg/kg of ethanolic and aqueous extracts evaluated against carrageenan induced paw edema in rats. Diclofenac sodium 100mg/kg used as standard. The results are statistically significant by using one-way ANOVA (p<0.001).

6. Shika Srivastava et al, (2011), reported the various poly herbal formulations used for the hypoglycemia activity. Various anti-diabetic poly herbal formulations used by the previous researches to prove their activity we are listed in this review some of the formulations discussed in this are Dinar, Diabet, Diasol, Dianex, Diashis, Diabrid, Diasulin and Dia-care etc. and their activities were discussed in this review some preliminary investigations done by the previous researches are also reported to maximize the use of herbal formulations to prevent the use of synthetic drugs which causes various adverse effects.

7. Pravin V. Gomase et al, (2011), studied anti-inflammatory activity of Azadirachta indica, Mommaratica charantsa Linn., ethanolic extracts by formulating them into two formulations F1 and F2. Indomethacin is taken as a standard anti-inflammatory drug for comparison. Caraggeenan is used to induce inflammation in rat paws. 2%w/v gum tragacanth is used to formulate F1 and F2 as suspending agent . Administration of 4000mg/kg b.w p.o. in rats of either sex does not show toxic reactions. F1 prepared with 400mg/kg of A. indica and 300mg/kgb.w p.o of M. charantia and F2 with 700 and 1000mg/kg b.w p.o. respectively. F1 showed significant anti-inflammatory activity.

8. Ritu Jain et al, (2011), prepared a poly herbal ointment using plant materials of Emblica offiinalis (fruits), Centella asiatica (leaves), Aloe vera (Leaves), Ocimum sanctum(Leaves), Eclipta alba (leaves) using 5%w/w in hydrophilic USP base assessed for treatingalopecia. Minoxidil is considered as standard drug to compare the activity of individual herb extracts and poly herbal formulation. Hair length, hair density, total serum protein were parameters analyzed. Results showed a good increase in hair length, may be due to the presence of flavonoids, tannins in the extracts.

9. Pravin V. Gomase et al, (2011), prepared a PHF using ethanolic leaf extracts of Momaratica charantia Linn and Azadirechta indica A. juss and evaluated for analgesic activity using Eddy’s hot plate and Heat conduction method response in rats writhing response method. F1 prepared with 300mg and 200mg, F2 prepared with 500mg and
5000mg/kg b.w. of M. charantia and A. indica Juss respectively. F1 formulation found to be good analgesic activity than F2 against standard diclofenac sodium.

10. **Boshtam M, et al. (2011)** studied anti-oxidant properties of *C. aurantifolia* in an *in vitro* model. In the present study, peel extract and fresh juice of *C. aurantifolia* proved to show anti-oxidant properties by preventing LDL oxidation.

11. **Iziara F. Florentino, et al, (2011)**, Evaluated the analgesic and anti-inflammatory activity of Ethanolic extract of Hydrocotyle umbellala L., which used in folk medicine to treat skin ulcers and rheumatism. Acetic acid-induced writhing test is used to evaluate nociceptive response in both phases of formalin test, carrageenan employed to induce inflammation. The EEA reduced the leucocytes migration and plasma extravascularation to pleural cavity in the carrageenan induced pleurisy. Results concluded with the tested activities are proved and may be by reducing the different mediators, such as histamine and serotonin.

12. **Khushubu Pandey, et al, (2012)**, studied the anti-oxidant and anti-inflammatory activities of Ethanolic extract of Parthenium hysterophorus Linn. Acute toxicity studies carried at dose of 2000mg/kg b.w. (OECD-425), so it is considered as therapeutic dose. DPPH-free radical scavenging method and careegaenan induced inflammation employed to evaluated the study proved that 200mg/kg bw dose have significant anti-oxidant and anti-inflammatory activities in rats further increase in dose i.e. 400mg/kg shows ulcerogenic response.

13. **Sunil Mistry et al, (2012)**, A PHF was prepared with Sidacordata 75mg, Coccinia indica 45mg and Scopari adulcis 30mg plant extracted with 95% ethanol to evaluate those dependent hepatoprotective activity. Study of PHF at 300mg/kg and 500mg/kg b.w. was studied against a standard silymarin (25mg/kg b.w.). CCL4 is used for inducing hepatotoxicity in dose of 1ml/kg/b.w. SGPT, SGOT, ALP, bilirubin are the parameters considered in this study. The levels of all the above parameters are increased indicating the hepatoprotective activity of the PHF against CCL4 induced hepatotoxicity.

14. **Rajasree P.H, et al, (2012)**, prepared apoly herbal extract of Azadirechta indica, Chromolaena ordorata, Mimosa pudica, Samadra indica was evaluated for its physiochemical property, anti-bacterial and anti-oxidant activities of the ointment is prepared by 2, 4, 6%w/w by fusion method using emulsifying ointment as base prepared formulations are found to be stable at 4, 25, 37°C. Anti-bacterial activity tested against Staphylococcus aures, Pseudomonas Sp, Bacillus sp, by agar diffusion by using betadine (5%w/w) as standard. Nitric oxide and hydrogen peroxide scavenging method used for
anti-oxidant activity. The formulations showed good anti-bacterial and anti-oxidant activities, hecbe it can be used for treating wounds.

15. Vetriselvan S, et al, (2012), studied in-vitro anti-bacterial and anti-oxidant of a PHF compared with a standard drug and individual plants extracts. For in-vitro evaluation of anti-bacterial activity using Cup and Plate method was employed, and the zones of inhibition were observed. The PHF was prepared using whole plant materials of Witharia somnifera, Bacopa monnieri, Cinnamomum zeylanicum each of 100mg. Gram positive bacterias like Klebsiella aerogenes and Pseudomonaus aerugnosa, E. coli were used for the activity assessment. Ferric ion reducing/anti-oxidant power assay (FRAP) was employed to analyze the anti-oxidant property of the PHF. It is concluded that based upon has good anti-bacterial and anti-oxidant activity and further studies are recommended to study toxicity and use of it in treatment of infection and cancer.

16. Sarang Jain et al, (2012), studied the anti-oxidant activity of ethanolic extract of PHF of three drugs Bryophyllum pinnatum. Ocimum sanctum and Syzigium aromaticum by using DPPH free radical scavenging method. Ascorbic acid is taken as a standard anti-oxidant drug. Anti-oxidant activity at various concentrations of PHF were analyzed i.e. 20, 60, 80, 100mg/ml and found that it has possessed good anti-oxidant activity.

17. Kumarasamy Raja D, et al, (2012), studied to provide a list of plants proven for wound healing activity. The study exposed that traditional medicine are still used by tribal people and it is established the value of wound healing. The list of plants given here are already reported of possessing wound healing activity. It focused on medicinal properties, ethnomedical uses and pharmacological activities of Indian medicinal plants and suggest practices regarding the conservation of these species.

18. Tharanga Krishna Kumari S, et al, (2012), studied the anti-inflammatory activity of Sarcotemma secamone (L) Bennet whole plant ethanolic extract at different doses as 150 and 300 mg/kg b.w. Indomethacin (10mg/kg) considered as standard drug. Albino rats i.e. group-3 injected with 300mg/kg b.w showed a very good activity i.e. 77095% after 180min when compared wth group-2 (71.98%) and standard group-5 (76.87%). Hence the extract at 300mg/kg b.w. has a significant analogous anti-inflammatory activity with standard drug.

19. Parveez Alam et al, (2012), developed an HPTLC method for qualitative and quantitative estimation of gallic acid from Emblica officinalis, Gerertn in poly herbal formulations. The Rs values was found to be 0.02, 0.13, 0.37, 0.70, 0.84, 0.91 for amla extract and 0.15, 0.34, 0.69, 0.83, 0.91 for amla in poly herbal tablets and standard gallic
acid Rf values was 0.79. In qualitative estimation gallic acid found to be 48.2 microgram/mg in amla extract and 12.8 microgram/mg in poly herbal extract.

20. **A study by Tundis, et al. (2012)** studied and compared the cholinesterase inhibitory activity and anti-oxidant capacity of essential oils obtained from different Citrus peel extracts and demonstrated that essential oils from *C. aurantifolia* possessed maximum free radical scavenging property and inhibited acetylcholinesterase more selectively compared to oils from other citrus peel.

21. **Tundis, et al. (2012)** studied and compared the cholinesterase inhibitory activity and antioxidant capacity of essential oils obtained from various Citrus peel and demonstrated and reported that essential oils from *C. aurantifolia* possess maximum free radical scavenging activity and inhibits acetylcholinesterase more selectively compared to other citrus peel oils.

22. **Boshtam M, et al. (2013)** studied and demonstrated the peel extract and juice of *C. aurantifolia* has potential to prevent progression of atherosclerosis due to its antioxidant activity.

23. **Dongmo PMJ, et al. (2013)** studied and evaluated the antioxidant, antiradical and anti-inflammatory properties of *C. aurantifolia*. This study evaluated the essential oils from Citrus aurantifolia showed an anti-inflammatory action in addition to antiradical activity.

24. **Ganesh G, et al, (2013)**, studied the anti-inflammatory and anti-oxidant activity of *Mimusops elengi L.* DPPH, ABTS free radical scavenging and HRBC membrane sterilization methods are employed. Carrageenan employed to induce inflammation in rat paws. Invitro anti-oxidant method of methanolic extracts of leaves compared with standard with IC50 of 10.25ug/ml (DPPH) and 13.5ug/ml (ABTS). In paw edema method 44.47%(in vitro) and 70-75% inhibition of anti-inflammatory was noted and standard produced 20.04% at 200mg/kg extract for 6h period.

25. **Chandra Prakash D et al, (2013)**, discussed above the various herbal plants which are having anti-diabetic activity. Various herbal drugs discussed are Wattakaka volublis, Abrus precaporious, Aloe vera, Aloe Barbadeusis, Trigonella foenum, Mangifera Indica, Tinospora cardifolia, Allium cepa, Morordica charantia, Ocimum sanctum, Azadiracta Indica etc and various formulations are already in market with the said activities are discussed, marketed products discussed are Epinsulin, Pancreatic Tonic.

26. **Dipak Patel et al, (2013)**, studied the ability of PHF for treating arthritis. The PHF was named ”RIPARE” was formulated and studied for its use in managing the arthritis. They also standardized the PHF for its identity, adulteration and availability for the future
researchers. Various preliminary standardization parameters studied are color, odor, nature and taste and quality tests like DT, weight variation, pH, ash value, total alkaloid and tannins etc., and quality tests for the presence of flavonoids, alkaloids, saponins, steroids, bitters etc., were analyzed. They finally suggested that the capsules were ready to use and are safe after analyzing all the characteristics results.

27. Deepak S.K et al, (2013), because of traditional value and abundant availability in household and in local market, Piper betle, Eugenia caryophyllus, Poeniculum vulgare, Acacia catechu were selected to prepare an aqueous extracts, and they are known to act on digestive system. The aqueous polyherbal extract was tested against aspirin induced and ethanol induced ulcers for its anti-ulcerative activity against standard drug omeprazole (30mg/kg). dose dependant study of extract was studied with a low dose (250mg/kg b.w p.o.) and high dose of 500mg/kg b.w p.o). Free radical scavenging activity of polyherb extract was studied and found good when compared with a standard BHT. A preliminary study shows the presence of flavanoids, alkaloids, terpenoids etc., may be due to presence of above active constituents. The polyherbal aqueous extract has potential anti-antiulcer activity caused by oxidative stress.

28. Sreenivas Reddy G. R., et al, (2013), prepared a PHE using aqueous extracts of betel, clove. fennel, black catechu was evaluated for anti ulcer activity using aspirin and ethanol induced animal models. Ulcer index and percentage of ulcer protection was determined. Anti-oxidant activity of extract was evaluated by DPH free radical scavenging method. A dose dependent study was done using 250 and 500mg/kg/b.w. administered animals show 75% gastro productive activity than 250mg/kg/b.w is 65% and standard drug omeperazole produced 98% protective action respectively.

29. Siddharth Sharma et al, (2014), prepared tooth paste using poly herbs i.e. Stevia rebaudiana, Glycyrrhiza glabra, A.Indica, O.Sanctum, Terminalia bilirica, Terminalia chebula, Piper longum, Curcuma longa, Emblica officinalis, A.arabica, Mimusops elengi, Quercus infectoria and salvadera persica. The methanolic extract of PHF2 showed maximum activity against S.Mutans and less activity against C.Albicans. Hence the activity produced does not match with the standard drug produced activity (gentamicin), but that dependent inhibition activity was observed.

30. K. Selvarani et al, (2014), studied the anti-arthritic activity of ethanolic extracts of Cayrata pedata leaves were assessed for anti-arthritic activity and its safety. The activity was assessedin rats with Frbend’s complete adjuvant (FCA) induced arthritic rats. Herbal extracts at dose of 500mg/kg b.w. p.o was administered for 21 days after the injection of
FCA in rats paws. A (p<0.05) significant inhibition of paw volume was observed from 4th-21st day in the treated groups. The biological parameters like arthritic index, erythrocyte sedimentation rate (ESR), alkaline phosphatase(ALP), acid phosphatase(ACP), reduced glutathions (GSH), Rheumatoid factor(RF), C reactive protein(CRP), and total WBC are studied as major markers for arthritis in prednisolone and C. padata treated animals and finally concluded that the ethanolic extract of C. padata has anti-arthritic activity.

31. **Ismail Shareef M, et al**, (2014), studied a comparative study of possible wound healing activity of Terminalia arjuna with a PHF consists of Terminalia arjuna, Ficus religiosa, Curcum longa, and Tamarindus indica were carried. Preliminary screening for the presence of various chemical constituents were tested for alkaloids, carbohysrates,proteins, steroids, saponins, glycosides and tannins of the various plants materials. An ointment of polyherbal preparation and individual terminalia arjuna were prepared using ointment base and PEG. Phytochemical screening shows presence of alkaloids and tannins only in T. arjuna and no sample shows presence of proteins and amino acids. PHF showed 95.94% healing property when compared with standard drug saframycin treated animals which showed 100% healing. Agretum treated group showed 90.90% and control animals showed 75.14%, may be due to self healing property.

32. **Vamsi .S, et al**, (2014), prepared two formulations using Lantana camara (leaves), Psidium guajava (leaves) and Curcuma longa (rhizome). The first three are methanolic extracts and the last is acetone extract with above extracts two formulations F1 and F2 were prepared using PEG4000 and PEG 6000as ointment base. Albino wister rats used and divided into 4 groups with each contains 6 animals (n+6) named control, standard, F1 and F2 receiving vehicle (ointment base), saframycin (2%w/w) F1 and F2 respectively. ANOVA followed by Dennett’s comparison was employed for analysis. The results showed that there is significant positive (p<0.05) with the F1 and F2. More over F1 shows more significant positive results than F2. They found that there is a synergetic effect of phytoconstituents with help to heal the wound much faster.

33. **Dinesh K, et al**, (2014), formulated three formulations F1, F2, and F3 (200mg/kg b.w,p.o) and tested against standard drug paracetamol (3g/kg b.w, p.o) induced hepatotoxicity and silymarin (25 mg/kg b.w, p.o) as standard control were administered once daily for 8 days. Degree of hepato-protective activity measured by using the parameters of change in color and weight of liver and biochemical parameters like SGOT, SALP, SGPT, and plasma proteins. In histopathology parameters like architecture of hepatic
lobes, swelling of liver, fatty changes, focal necrosis, cell infiltration etc., was used as functional parameters. The study results that F3 showed significant better results when biochemical parameters are taken into consideration. Mechanism of action was unknown and further studies required to reveal it.

34. **Shekhar MH and colleague, (2014)** in their review article reported that major bioactive compounds like phenolic acids, flavonoids, limonoids of *Citrus aurantifolia* possess beneficial effects in human. These beneficial effects mainly includes antioxidant activity, carcinogenic property and anti obesity action.

35. **Kamarapu. P, et al, (2015),** studied a formulation prepared with methanolic extracts of Shatavari and Terminalia chebula was evaluated for anti-microbial activity using Cup-plate method. Four formulations i.e. F1, F2, F3 and F4 with different proportions of the crude extracts were prepared and tested. F1 showed greater activity against E. coli and F3 show greater significant against Staphylococcus aures. Hence these formulations can be used for various skin infections infected with above mentioned micro organisms.

36. **C.S. Barik et al, (2015),** review deals with various poly herbal formulations (PHF) used by different countries of the world, collected the information of traditional herbal formulations was documented in the form of research and reviewed articles. This review summarizes the different types of herbs used for the preparation of PHF and their therapeutic efficacy (Pre-clinical and clinical results) with their safety. This gives idea of enormous pharmacological activities of PHF which insists the young researchers for future research to protect us from various diseases and may serve us as natural gold for the promotion of mankind.

37. **Rad0ha K, et al, (2015),** formulated a PHF (IMMU 4plus) using T. cordifolia, W. somnifera, C. asiatica, A. india, was evaluated for anti-microbial activity against *P. auroginosa, S. aureus, S. mutans and K. pneumonia.* The anti-bacterial activity was assessed by measuring the diameter of inhibition zone formed around thee well. Gentamicin is taken as a standard positive control extracts showed anti-bacterial activity both against gram positive and gram negative bacteria. Hence it is possible to produce a broad spectrum anti-biotic.

38. **Himaja N et.al, (2015),** prepared poly herbal diabetic tablets using ethanolic extract of *A.Indica, M.Indica,* and *O.sanctum* by wet granulation method. The tablets were checked for physical parameters like weight variation, hardness friability and thickness. Other parameters like DT, color and angle of repose, bulk density and compressibility index where also determined all the parameters evaluated with the tablets formulated met the
standards to use as tablets for anti diabetic activity. The pharmacological activities of the tablets are yet to be analyzed.

39. **Abdul Azeez et al, (2016)**, prepared KKS using 50g each of Strychnos potatorum, Acacia catechu, Woodifordia fruticose, Salacia reticulate, Curcuma longa, Ziziphus jujube, Mangifera indica, Terminalia chebula and Cyperus rotundus. The KKS house preparation and marketed product samples were subjected to various standardization methods. The results showed that all the parameters of freshly house prepared sample and standard marketed samples were found to be analogous. In both the samples carbohydrates, proteins, amino acids, flavanoids, saponins, phenols and tannins are present and Alkaloids, steroids and cardiac glycosides are absent. The physiochemical parameters results are also nearly analogous.

40. **Patil JR, et al. (2009)** determined effect of on pancreatic cancer cell lines. The study results indicated antioxidant activity and ability of inhibition of cancer cell proliferation is proportionate to flavonoids content and content of both limonoids and flavonoids, respectively.