REVIEW OF LITERATURE

- Neha Sharma et al., (2014), an attempt was made to reveal the possible beneficial results of *Trigonella foenum graecum* (TFG) extract and glibenclamide (GLB) in regulation of diabetes mellitus and hepatic lipid peroxidation. Combined effects of TFG and GLB compared with that of individual treatments for regulation of alloxan induced hyperglycemia, hepatic LPO and to the changes in the status of antioxidants. HPLC was also performed to find out the concentrations of major active compounds. Combined administration of TFG and GLB not only inhibited LPO and glucose to a great extent, but also ameliorated the alloxan induced decrease in insulin and antioxidants in contrast to the individual drugs. HPLC analyses of the test extract revealed the presence of trigonelline, quercetin and rutin. Fenugreek seed extract, when added along with glibenclamide may ameliorate diabetes mellitus to a greater extent as compared to monotherapy.

- Jaleh Varshosaz et al., (2012), intention of the nearby examination was to assess the binding potential of fenugreek mucilage in formulation. Mucilagenous part of fenugreek seed was secluded and employed in a role of fastening agent in all diverse medicines.Model drugs chosen were theophylline (TH), ibuprofen (IB), Calcium acetate (CA). The consequences demonstrated that a 2.5% amount of the novel binder in contrast to typical binders studied.

- Hawazen A. Lamfon, (2012), studied the result on testicular toxicity induced by carbendazim using extract of seeds of methi. It was accomplished that testicular toxicity gets advanced by means of fenugreek extract. The findings can be as of antioxidant potential of plant matter.

- Payal Dande and Suraj Patil, (2012), examined antifertility potential of seeds of fenugreek containing saponins. Three diverse investigational models were taken like estrogenic activity, anti implantation and anti estrogenic activity. In anti implantation potential saponin extract showed greater prominent action. At the similar instance it depicted less estrogenic potential in rats. It can be accomplished that antifertility potential was proved by the saponin extract of Fenugreek.
V. Senthil and D. Sripreethi, (2011), the rationale of the experiment was to prepare and examine a novel, inexpensive and efficient suspending agent that can be successful alternative for customary suspending availability. The lessons demonstrated that mucilage gained of Methika seeds possess 8% concentration of suspending agent. Greater sedimentation volume of extract of methi in contrast to tragacanth, acacia and PCM observed. Greater viscosity is prime requisite in pharmaceutical formulations. Hence, Fenugreek can be engaged as a preservative of preference.

Meera Sumanthet al., (2011), endeavor of current revision has been taken to examine anti ulcer properties of aqueous extract gained from Methika. The ulcer index was reduced by aqueous extract of plant. It proved the ulcer protective potential of methi (fenugreek) plant matter. The potential was largely because of anti oxidant components.

Manoj M Nitalikar et al., (2010), examined a study technique for division of husk part of T. foenum graecum (fenugreek). A variety of physicochemical criteria counting angle of repose, distribution of particle and swelling factor were determined. As a binder husk of fenugreek in tablets was studied. To optimize the binding potential of dispersion of methi husk in tablets, as a sculpt drug ibuprofen was chosen. Assessment of dispersion of husk with paste of starch was done. The greatest amount needed of the dispersion of husk was 4-6% as a binder, which is comparatively less in contrast to standard. Dispersion of methi husk was established to be advanced over paste of starch.

Fedelic Ashish Toppo et al., (2009), review paid attention on therapeutic potential and need of Fenugreek plant reminiscent of bronchitis, fevers, asthma, lung infection, allergies, ulcers, gas, cancer, appetite, boils, sinus problem, bronchial, mucus, cholesterol, gallbladder problem, heartburn, inflammation, water retention, diabetic retinopathy, gastric disorders, anemia, throat, abscesses, anemia, eyes, uterine Problems, paid attention of the people on this matter.
**A. Laroubi et al., (2009)**, conceded project to check the diverse extracts prepared from the seed part of methi for its antinociceptive potential. Hot plate method, acetic acid and formalin were chosen as a project model to determine the painkilling potential. In case of acetic acid, intraperitoneal injection was given. Extracts appreciably, decreased the pain caused by injection of acetic acid. In case of formalin model, apart from extract of ethyl acetate in premature period noticeably shortened the pain. These findings recommended that extracts as of diverse components significantly activated both the peripheral and central system to depict the painkilling potential.

**Saravanan K., (2009)**, investigated ethanolic extract of fenugreek plant for its antidiabetic potential. The diabetes was induced in rats by alloxan drug. The extract was given orally in a dose of 50mg/100g up to 48 days. Parameters checked were SGOT, amount of glucose in blood, amount of cholesterol in serum and level of SGPT in alloxan treated and healthy rats. It can be seen that application of extract prepared from plant showed greater reduction in amount of glucose in blood, amount of cholesterol in serum, level of SGOT and level of SGPT.

**Fariba Sharififar et al., (2009)**, examined swelling reducing potential alcohol extract of plant. The model was carrageenan-produced edema and standard drugs were dexamethason and ibuprofen. Diverse doses of drugs were 100, 200, 400 mg/kg taken. The findings proved that bigger inhibitory zone of edema was shown by 3 and 5 % amount of creams prepared from methi plant. The findings of this project, consequently, prop up the customary choise of fenugreek plant to heal inflammations.

**Priyadarsini et al., (2007)**, determined antioxidant potential of extract of fenugreek by means of a variety of **in vitro** assays. The findings demonstrated that extract of seed part of fenugreek protects cell structures due to presence of antioxidant components. Thus, preventing oxidative damage.

**J.D.Sharma and Anjula Bhinda, (2005)**, studied and reported 100 % negative result in case offertility with treatment of fenugreek. Hence, extract of fenugreek show antifertility and anti estrogenic potential in rats.
- **Papiya Mitra Mazumder et al., (2012),** determined the immunomodulatory potential of root part of *Glycyrrhiza glabra* L. They checked whether considerable enrichment in immunomodulation happens or not by means of grouping with zinc. Results depicted the immunomodulatory potential of aqueous extract of root part of *Glycyrrhiza glabra* in an amount of 1.5 g/kg. Enrichment of immunomodulatory potential by *Glycyrrhiza glabra* roots in combination with zinc has been established in every aspects of the project.

- **Kiran Sharma et al., (2010),** communication attempted to examine the root part of *Glycyrrhiza glabra* L. for diverse preface phytochemical and physicochemical lessons.

- **Shubhangi kale et al., (2010),** investigation has been conceded out to examine Glycyrrhizic acid, a constituent of *Glycyrrhiza glabra* plant. Glycyrrhizic acid is primarily salt of ammonia. Anticonvulsant consequence of Glycyrrhizic acid was checked. The convulsions were induced by isoniazid and pentylenetetrazole in an amount of 300mg/Kg s.c and 80 mg/Kgs.c respectively. Complete application of 100, 200, 300 and 400 mg/Kg amount of Glycyrrhizic acid was capable to holdup the onset of convulsions and death in an amount dependent pattern. The findings were established to be noteworthy through P-Values for isoniazid and pentylenetetrazole caused convulsions like 0.002 and 0.001 correspondingly in contrast to vehicle given set. Hence glycyrrhizic acid proved anticonvulsant potential.

- **Mahboubeh Iraniet al., (2010),** in these lessons, the antimicrobial profile of extracts made from leaf part of licorice were examined in contrast topotential of extracts of root part. The extracts of leaf and root depicted effects aligned with *Candida albicans*. They examined gram-positive microorganisms in an amountneedy pattern. The ethanolic extract made from the leaf part was mainly vigorous extract aligned with gram-positive microorganism in contrast to root extracts.

- **Shapna Sultanaet al., (2010),** evaluated the powerful antimicrobial potential of *Glycyrrhiza glabra* alongside more or less all the microorganisms apart from *Pseudomonas aeruginosa*. It demonstrated uppermost empathy beside *Staphylococcus aureus* by means of the region of mortification twenty two mm. Extract infatuated effective cytotoxic commotion having lethal dose assessment of 0.771µg/ml. Additional tender, antioxidant action was initiatedsensibly presenting IC 50 assessment of 87.152 µg/ml.
- **Manoj M. Nitalikar et al.,** (2010), conducted lessons to evaluate the antibacterial potential of extracts of root part of Licorice. The extracts were prepared in acetone, ether and chloroform. Extracts were poured on bacteria by means of the well distribution technique. The extracts demonstrated considerable antibacterial potential adjacent to *Staphylococcus aureus* and *Bacillus subtilis*, a gram positive organism, *Pseudomonasaeruginosa* and *Escherichia coli* microorganisms.

- **Fazel Shamsaa et al.,** (2007), determined the amount of Glycyrrhizic acid following oral application of water extract of licorice by means of a narrative HPLC technique in plasma. The technique was linear ranging from 0.1-5.0 µg/ml for Glycyrrhizic acid. Highest amount of Glycyrrhizic Acid obtained at eight hour following oral application of licorice extract. The residential technique was appropriate for examination of Glycyrrhizic acid in plasma of rat.

- **Farzaneh Naghibi et al.,** (2006), conceded out a HPLC process for examination of amount of 18 β-glycyrrhetinic acid in licorice extract. They accomplished that the process is easy, quick, secure, precise, inexpensive and helpful to standardize licorice crop.

- **Ali Aberoumand,** (2011), carried out qualitative determination of chemical and nutritional composition of the tubers of *Cordia myxa Roxb* fruits. Fruits were found to be medium in crude protein (8.32%), carbohydrate (57.08%), Ash (6.7%), fibre (25.7%) and fat (2.2%). Mineral analysis of the tubers showed that they contain the following essential minerals: Sodium (1.62mg/g), Potassium (7.83 mg/g), calcium (0.46mg/g), zinc (0.35mg/g) and Iron (0.51mg/g). The phytochemical showing of the tubers discovered the incidence of polyphenols, steroidal moiety, saponin and alkaloidal components.

- **Devang pandya et al.,** (2011), studied the qualitative and quantitative microscopic evaluation including transverse section and powder study. Quantitative microscopic parameters were also ascertained. Chief microscopic characters include vascular bundles having xylem vessels, glandular trichomes, cluster crystals, phloem.
Al-Awadi *et al.*, (2011), reported anti-inflammatory properties of certain species of Cordia. One of which was *Cordia myxa* fruits on practically produced colitis via intrarectal application of 4% acetic acid. Colitis was established by a considerable enhancement in myeloperoxidase potential. Colitis was connected by means of considerable reduction in tissue potentials of glutathione peroxidase. Histologic determination plus myeloperoxidase potential depicted that the fruit application upturned the exceeding results in swollen plasma in addition liver of animals. They proved, potential may be accredited moderately to antioxidant potential and to reinstatement of the amount of few components in the swollen colon, plasma and liver.

Weaver and Anderson, (2007), reported the distribution, morphology, medicinal properties and uses of *Cordia myxa*.

Mehrotra, (2007), studied about the medicinal properties of *Cordia myxa* and reported that it is used as an expectorant, in colic, dyspepsis, ulcers and cough.

R. Siva, (2007), reported that *Cordia myxa* give yellow and red colour dye from roots, leaf and medicinally used as an astringent, anthelmentic, demulcent, expectorant and in diseases of chest and respiratory tract.

Abou-Shaaban *et al.*, (2006), determined the pharmacological potential of *Cordia myxa* mucilag. They concluded that mucilage of *Cordia myxa* reduced rabbit arterial blood pressure in a dose needy approach devoid of distressing the respiratory rate. These findings endorsed to commencement of parasympathetic ganglia and dilation of peripheral blood vessel.

Afzal *et al.*, (2004), extracted *Cordia myxa* L. and performed antimicrobial potential of extracts beside bacterial and fungal pathogens. They analyzed a variety of photosynthetic pigments above a choice of 400-750 nm. The comparative quantity of chlorophylls and specific absorption coefficients were determined using equations. Equations based on the absorbance and molar absorption coefficients data to calculate the total chlorophylls.
- **Gohil and Singh, (2003),** studied about some tree species as a source of rural energy. They reported that *Cordia myxa* produced the lowest dry extractable root mass.


- **Occhiuto F et al., (1989),** studied property of four plants including fruits of cordial on isolated guinea pig ileum. Results showed that Laxiflora, *Lantana camara* and *Trema guineensis* caused contraction while *Cordia myxa* reduced acetylcholine-induced contractions.

- **Karawya MS et al., (1980),** reported gummy components of few plants in fruits of *Cordia myxa* L. Chemical entities of the mucilages was determined by analyzing hydrolysates quantitatively and qualitatively by GC plus TLC.

- **Kassem AA et al., (1969),** used mucilage of *Cordia myxa* to prepare amidopyrine granulations in an attempt to prevent capping of the tablets. Tablets were also prepared using different concentrations of starch paste, acacia mucilage, and gelatin mucilage. Capping was measured using the Erweka tester. The amount of fines was considered for each batch of tablets.

- **Biren Shah et al., (2011),** established a microwave mining practice to optimize the mining of mucilage from fruits of *Abelmoschus esculentus*. Both conservative and microwave process has been applied for the seclusion of mucilage. 11.55% outcome of mucilage was achieved when seclusion conceded out by microwave removal at 40 min and 160 Watt intensity. Enhancement in outcome of mucilage was in contrast to one hour conservative heating
process. The yield gained by both the process was of comparable scenery chemically. Developed MAE process can be applied productively in profitable seclusion of mucilage.

- **Biren Shah et al., (2010)**, studied optimization of the withdrawal of mucilage from *Trichosenthes dioica* fruits. Both conservative and microwave process has been applied for the seclusion of mucilage. 84.92% enhancement in outcome of mucilage seen when it was conceded out for 20 minutes at 320 watt intensity. 38.09% and 52.06% enhancement in outcome of mucilage was observed when it was conceded out for 40 minutes and 5 minutes at 160 watt and 640 watt respectively in contrast to one hour conservative process. The yield gained by both the process was of comparable scenery chemically. Developed MAE process can be applied productively in profitable seclusion of mucilage.

- **Sudarshan Singh et al., (2010)**, attempted to examine the appropriateness of seeds as binder in tablet formulation. No material interface was seen from IR spectrometry and differential scanning. Presence of flavanoids and protein was proved by means of phytochemical distinctiveness of mucilage. Study of diverse physiochemical parameters like pH, viscosity, moisture content, microbial characteristic, powder porosity, swelling factor and solubility, were checked. Binding and granulating potential of mucilage was checked by taking Zidovudine compressed tablet. Amount of mucilage taken were 2, 4, 6 and 8 w/v. Granules were prearranged through damp granule forming technique. Diverse examination criteria were checked. The characteristics were compared with Guar gum in concentration of 8% w/v. The prepared tablets were organized and checked for various parameters including *in vitro* dissolution studies. Thus, increasing amount of mucilaginous substance resulted in increased solidity and decreased disperse time.

- **R. Senthil selvi et al., (2010)**, isolated mucilage from the seed part of *Caesalpinia pulcherrima*. The physical properties of the gum were determined. The gum was examined free from toxicity. Toxicity was conceded out in mice. Binding and granulating potentials were examined by means of Diclofenac Sodium taking damp granulation method to formulate granules. The formulated granules were examined for diverse physical criterias including flow characteristics. All the lessons were performed by means of binding property
of starch using 10 % concentration. The tablets were examined for all the physical parameters including disintegration time. The *Caesalpinia pulcherrima* mucilage was proved to obtain luminous binding property. It could be employed as a binder in conformist tablet preparation.

- **Anoop Kumar Singh et al., (2010),** examined the *Mangifera indica* gum for its binding efficacy by formulating tablets using paracetamol as a reference drug. Method adopted to formulate tablets was damp granulation. Diverse physicochemical properties were examined. The amount of fines of the tablets was found from 1.12 to 0.26 %. The time for breaking the tablet determined from 3-8 minutes. Binding efficiency of gum found to be in contrast to acacia at parallel concentration. Strength of tablet formulated taking *Mangifera indica* ranges from 6.3 to 6.8 kg/cm² that is analogous to standard binder.

- **Tripti Jain et al., (2009),** review focused the chief benefit of the advanced techniques in contrast to conservative techniques. Benefit is the enhanced efficacy of withdrawal that results in enhanced outcome and reduced time period of withdrawal.

- **Kale RH et al., (2009),** studied the examination of *Delonix regia* mucilage in formulation of calcium carbonate tablets. Tablets were examined and findings were checked in contrast to standard calcium carbonate tablets. In conclusion, mucilage gained from seeds have good straping potential analogues to reference.

- **Aremu OI et al., (2009),** examined beilschmiediagum resultant from the non poisonous seeds of *Beilschemedia mnnii* for its binding potential in paracetamol tablets. A comparative lesson depicted that the granules bound with Beilschmiediagum were reasonably of better-quality and harder than gained with gelatin gum. As the amount of beilschmiediagumincreases, amount dissolved, strength and breaking time get enhanced. Tablets having 5% w/w concentration of beilschmiediagum had a binding property around two times that of gelatin with 91 % amount dissolved following 30 minutes. The findings gained recommend that beilschmiediagum has potential as a saleable binding means.
Tavakoli Net al., (2008), determined efficiency of novel binder removed from Hibiscus esculentus in tablet formulation. To examine effectiveness of binder, two models, counting a placebo preparation and medicinal preparation were examined. Granules were formulated by diverse concentrations of okra gum and tablets were formulated by means of a Kilian punch. Cornstarch and Polyvinyl pyrrolidone were taken as the reference for assessment. Physical appearance of granules examined. Tablets counting disintegration time plus dissolution rate were determined. The characteristics of placebo granulate as well as those of tablets were usually excellent. Furthermore, the physical characteristics of Calcium acetate and ibuprofen formulated using okra gum depicted satisfactory strength, valuable time for break up and lessen fines. Okra gum formulates few tablet preparations with fine solidity and friability.

D. Panda et al., (2008), examined efficacy of Moringa gum as binder and liberation retardant in preparations. Examination of consequence of dehydration of calcium sulphate and lactose as diluents on the liberation of propranolol hydrochloride was conceded out. Lessons declared no chemical interaction among all components. Drug liberation enhanced through enhancing amounts of additives in addition reduced amount of gummy mass irrespective of solubility characteristic of additives. Found liberation means was fickian. Erosion of additives has shown consequence on liberation of medicine in minute differences was not found. Hence, additives taken played an insignificant part in amending the liberation.

Martins E et al., (2008), studied outcome of grewia gum on involuntary potential of PCM tablets. Preparations containing gum demonstrated a slower onset than formulation containing Poly vinyl pyrrolidone. Preparations containing gum were found exhibiting graeter packing potential. Gummy mass was found advancing mutability of PCM granule formation superior in contrast to poly vinyl pyrrolidone. Study suggested that gum compared with poly vinyl pyrrolidone taken. Hence could be beneficial replacement in PCM preparations.

Jani GK et al., (2007), determined excipient functionality of Aloe Barbadensis mucilage in formulating persistent liberating matrix tablets. They showed that mucilage gained from nature have been extensively considered as excipients in pharmaceutical preparations.
Mucilage is biocompatible, economical, and willingly obtainable. Objective of lessons was extorting mucilage from leaf of *Aloe barbadensis* plus evaluated as additive in pharmaceutical persistent liberating tablet preparations. Their investigation depicted that mucilage was likely as an excipient in the preparation of persistent liberating tablets.

- **S. Hemalatha et al., (2007)**, review focused the significance of mining step in setting up reputable principles for herbal medication universally. Elevated and speedy mining ability through smaller amount liquid gaining as well as protecting heat sensitive components are few stunning features of microwave mining method. A concise hypothetical environment of microwave heating plus fundamental values to consume microwave power for mining was offered for improved perceptive. Deliberations on major criterias influencing mining competence and diverse arithmetical optimization plans are also focused.

- **Eichie FE et al., (2007)**, study conceded to examine the binding potential of *Acassia senegal* and *Cissus populnea* mucilage on the formulated paracetamol tablets. Mucilage was taken in different amount in a range of 1-15 %. Viscosity of mucilage was examined. As a consequence, *Cissus populnea* mucilage produced softer tablets than *Acassia senegal*. The lessons depicted that *Cissus populnea* mucilage showed poor tableting potential in contrast to mucilage of *Acassia senegal*. Mucilages of *Acassia senegal* and *Cissus populnea* having the properties for replacement as binder in contrast to pricey binders in preparing tablets.

- **Adetogun GE et al., (2007)**, studied effect of mucilage from seed part of *Delonix regia* on compaction distinctiveness of PCM tablet preparations. They concluded that granules containing *Delonix regia* mucilage have profound result with acacia as well as tragacanth.

- **Odeku OA et al., (2002)**, examined the effect of gum of *Khaya grandifolia*. Effect of natural binding agent gained from *Khaya grandifolia* on the mass and compression distinctiveness of a tablets prepared taking paracetamol as a model remedy has been studied. Preparations having *Khaya grandifolia* gum depicted superior densification than preparations having gelatin and Poly Vinyl Pyrrolidone through die filling, but at the same time less densifications owing to reformation at fewer pressures. The mean outcome pressure of the
preparation particles gained from Heckel graphs and a supplementary pressure phrase, gained from kawakita graphs are inversely connected to plasticity. The plots showed reliance on the usual planet and consideration of the binder, with preparations having *Khayagrandifolia* gum showing the less and major ideals correspondingly. Tablets prepared from *Khayagrandifolia* gum had the less tensile force values. They also had the less affinity to protect or lid, as demonstrated by their less fragility. The categorization of the preparations assist that *Khayagrandifolia* gum can be urbanized into a marketable binding option for scrupulous tablets.