



**Books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during academic year 2019-2020**

Sl. No.	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Name of the conference	National / International	Year of publication	ISBN number of the proceeding	Page No
1	Dr.S.Satya Lakshmi		Characterization of Pathogenic Bacteria Isolated from Indian Currency Notes and Determination of Antibiotic Resistance Profile	Innovations in Biotechnology and Life Sciences	Innovations in Biotechnology and Life Sciences	International	2020	978-93-88647-33-5	<a href="#">7-10</a>
2	Mr. A.Kanaka Raju		Synthesis, characterization and anti-microbial activity of Schiff base containing Chalcones	Latest Advancements & future trends in Engineering, Science, Humanities & Management	Latest Advancements & future trends in Engineering, Science, Humanities & Management	International	2020	978-93-90103-06-5	<a href="#">11-15</a>



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3	Mr. K.Varaprasada Rao		Development and validation of UV Spectrophotometric Methods for the Estimation of Voriconazole in Bulk and Pharmaceutical Formulation	Latest Advancements & future trends in Engineering, Science, Humanities & Management	First Virtual International Conference on Latest Advancements & future trends in Engineering, Science, Humanities & Management	International	2020	978-93-90103-06-5	<a href="#">16</a>
4	Mrs. A. Swathi Annapurna		Enhancement of solubility of Atorvastatin by liquisolid technique	Latest Advancements & future trends in Engineering, Science, Humanities & Management	First Virtual International Conference on Latest Advancements & future trends in Engineering, Science, Humanities & Management	International	2020	978-93-90103-06-5	<a href="#">17</a>
5	P.Bala Krishnaiah		Herbal Stain remover	Latest Advancements & future trends in Engineering, Science,	First Virtual International Conference on Latest Advancements & future trends in	International	2020	978-93-90103-06-5	<a href="#">18</a>



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				Humanities & Management	Engineering, Science, Humanities & Management				
6	K.Purna Nagasree		Anti tubercular activity of hydodistilled volatile oils	Latest Advancements & future trends in Engineering, Science, Humanities & Management	First Virtual International Conference on Latest Advancements & future trends in Engineering, Science, Humanities & Management	International	2020	978-93-90103-06-5	<a href="#">19</a>
7	M.Saritha		Formulation and evaluation of metoprolol floating tablets using Maize cob husk	Latest Advancements & future trends in Engineering, Science, Humanities & Management	First Virtual International Conference on Latest Advancements & future trends in Engineering, Science, Humanities & Management	International	2020	978-93-90103-06-5	<a href="#">20</a>



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8	Dr. M.Trinadha Rao		Formulation and evaluation of orodispersible tablets of aceclofenac by HP- $\beta$ cyclodextrin for improved patient compliance	Latest Advancements & future trends in Engineering, Science, Humanities & Management	First Virtual International Conference on Latest Advancements & future trends in Engineering, Science, Humanities & Management	International	2020	978-93-90103-06-5	<a href="#">21</a>
9	Mrs K.Gana Manjusha		Formulation and evaluation of orodispersible tablets using a natural polysaccharide isolated from the raw fruits of Hibiscus sabdariffa	Latest Advancements & future trends in Engineering, Science, Humanities & Management	First Virtual International Conference on Latest Advancements & future trends in Engineering, Science, Humanities & Management	International	2020	978-93-90103-06-5	<a href="#">22</a>
10	Mr. P.N.Mallikarjun		Enhancement of solubility of Glipizide by spherical crystallization technique	Latest Advancements & future trends in Engineering, Science,	First Virtual International Conference on Latest Advancements & future trends in	International	2020	978-93-90103-06-5	<a href="#">23</a>



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				Humanities & Management	Engineering, Science, Humanities & Management				
11	Mr. P.Srinu		in vitro anti-oxidant activity of ethanolic extract of flowers <i>Hymenocallis littoralis</i>	Latest Advancements & future trends in Engineering, Science, Humanities & Management	First Virtual International Conference on Latest Advancements & future trends in Engineering, Science, Humanities & Management	International	2020	978-93-90103-06-5	<a href="#">24</a>
12	Dr. P.V.Kamala Kumari		Screening and isolation of cyclodextrin glycosyl transferase producing bacteria from soil samples	Latest Advancements & future trends in Engineering, Science, Humanities & Management	First Virtual International Conference on Latest Advancements & future trends in Engineering, Science, Humanities & Management	International	2020	978-93-90103-06-5	<a href="#">25</a>



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13	Dr. S.Satya Lakshmi		Isolation and identifiacion of cellulase producing bacteria from mangrove soil	Latest Advancement s & future trends in Engineering, Science, Humanities & Management	First Virtual International Conference on Latest Advancement s & future trends in Engineering, Science, Humanities & Management	International	2020	978-93- 90103-06- 5	<a href="#">26</a>
14	V.Jhansi Lakshmi		Evaluation of in vitro antimicrobial and in vivo wound healing activity of polyherbal formulations in albino wistar rats.	Latest Advancement s & future trends in Engineering, Science, Humanities & Management	First Virtual International Conference on Latest Advancement s & future trends in Engineering, Science, Humanities & Management	International	2020	978-93- 90103-06- 5	<a href="#">27</a>



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# CERTIFICATE

## OF APPRECIATION

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**Characterization Of Pathogenic Bacteria Isolated From Indian Currency Notes And Determination Of Antibiotic Resistance Profile**

submitted by

*Satya Lakshmi S*

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## AB-044

**Characterization of Pathogenic Bacteria Isolated from Indian Currency Notes and Determination of Antibiotic Resistance Profile**Satya Lakshmi Siragam<sup>1\*</sup>, Surendra Manuri<sup>1</sup>, Rama Rao Bora<sup>1</sup><sup>1</sup> Department of Pharmaceutical Biotechnology, Faculty of Pharmacy, Vignan Institute of Pharmaceutical Technology, Duvvada, Visakhapatnam, Andhrapradesh, India, 530049.

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**Objective:** Currency notes are always subject to contamination by pathogenic bacteria because these are the most exchangeable items in communities and there by serves as potential source for transmission of infectious diseases. The present study was conducted to determine the prevalence of contamination by pathogenic bacteria in Indian currency, estimate the susceptibility of the isolated organisms towards commonly used antibiotics, and finally detects the resistance profile to some broad spectrum antibiotics.

**Methods:** This study was carried out using 50 samples of currency notes of five different denominations that were collected from different areas where the currency interchangeable frequently from one person to other. Bacterial community on currency notes was determined using culture isolation techniques, and Kirby–Bauer disk diffusion method was employed to determine antibiotic sensitivity. Based on morphological and biochemical characters the cultures were partially identified.

**Results:** Contamination was found on the surface of all the collected currency notes. *Pseudomonas* was the most recurring and most resistance (gentamicin, kanamycin, ampicillin, tetracycline, cephalothin and methicillin) species found on currency notes. *Staphylococcus*, *Bacillus*, *Proteus* and *E. coli* were the next dominating species isolated from currency notes. The presence of small tiny cracks and microorganisms on currency notes were identified by SEM

images. The identified organisms showed resistance to some broad spectrum antibiotics. So, the currency notes are also acting as potential source of bacterial contaminants to cause contagious infections.



Dr. Suresh Rao

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**Development and Validation of U.V. Spectrophotometric Methods for the Estimation of Voriconazole in Bulk and Pharmaceutical Formulation**

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A simple, sensitive and reliable UV spectrophotometer method has been developed for the estimation of voriconazole in the bulk and pharmaceutical dosage form. Estimation was carried out at wavelength of 223nm using methanol as solvent. The beer lambert's law range was observed in the range of 5-30 $\mu$ g/ml with correlation coefficient ( $R^2=0.995$ ). The percentage recovery was found to be in the range of 98.62 to 101.25%. The proposed method was found to be simple, accurate, and reproducible. All the parameters of the analysis were chosen according to ICH[Q2(R1)] guidelines and validated statistically using SD and %RSD.

Keywords: UV spectrophotometer method, Voriconazole, ICH[Q2(R1)] guidelines



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### Enhancement of Solubility of Atorvastatin by Liquisolid Technique

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The solubility and dissolution properties of any drug are vital determinants of its oral bioavailability. The dissolution rate of poorly soluble, highly permeable (BCS-II) drugs, such as atorvastatin calcium, can be improved by application of the liquisolid (LS) technique. Methods: Different liquisolid compacts were prepared using a mathematical model for calculating required quantities of powder and liquid ingredients to produce an acceptably flowable and compressible admixture. Avicel PH 102, Aerosil 200 and Explotab were employed as carrier, coating material and disintegrant, respectively. The prepared liquisolid systems were evaluated for their micromeritic properties. Liquisolid compacts were prepared and evaluated for their tableting properties. Results: The liquisolid system showed acceptable micromeritic properties. The tableting properties of the liquisolid compacts were within the acceptable limits. The release rates of liquisolid compacts were markedly higher compared with directly compressed tablets, due to increasing wetting properties and surface area of the drug. From the obtained pharmacokinetic parameters, such as the AUC, t<sub>max</sub> and C<sub>max</sub>, the liquisolid compacts demonstrated better bioavailability compared with their conventional formulation. Conclusion: This study shows that the liquisolid technique is a promising alternative for improvement of the dissolution and oral bioavailability of water insoluble drugs

Keywords: Atorvastatin calcium, liquisolid (LS) technique, Avicel PH 102, Aerosil 200 and Explotab.



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### Herbal Stain Remover

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A stain is a discoloration that can be clearly distinguished from the surface, material, or medium it is found upon. They are caused by the chemical or physical interaction of two dissimilar materials. Staining is used for biochemical research, metal staining. The herbal stain remover are prepared in three formulations among those formulations F3 formulation provide better results as compare to other formulations. The optimized formulation Eucalyptus oil and showed highest consistency and remained in liquid state for longer duration. So, on the basis of result it can be concluded that removing by help of herbal ingredient is achieved. F1 formulation was failed to remove stains of iodine and ink and it having solid consistency. All other stains are removed. F2 formulation was able to remove iodine slightly but not able to remove ink, other stains are also removed but it also having semi solid consistency. F3 formulation was able to remove iodine stains but ink stains slightly remain on fabric. The consistency of formulation F3 remains as a liquid.

Keywords: Stain, Eucalyptus oil, F3 formulation, F1 formulation



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### Anti Tubercular Activity of Hydrodistilled Volatile Oils

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Hydrodistillation was used with the help of clavenger apparatus to extract the essential oils from various natural components like lemon peel, orange peel, black peppar, cinnamon, eucalyptus leaves, ajwain, star anise, nut meg and clove. The above materials were freshly collected, dried and powdered (if necessary). Then they were subjected to distillation for 4-6hrs. using water only. The supernatant oil (few mL) was collected into dried glass bottles and were analysed for antitubercular activity using MABA method. The oils were also subjected to NMR analysis to find the structure of active constituents. Oils from Nutmeg and Orange peel have MICs ranging between 250 to 125  $\mu\text{g/ml}$ ; Oils from Black pepper and Lemon peel have MICs ranging between 125- 62.5  $\mu\text{g/ml}$ ; Oils from Eucalyptus, Clove, Cinnamon and Ajwain have MICs ranging between 62.5 – 31.2  $\mu\text{g/ml}$ . It was found that the volatile oils obtained from eucalyptus leaves, clove buds, Cinnamon bark and Ajwain through hydrodistillation are having more potent anti tubercular activity than the remaining oils.

Keywords: Hydrodistillation, Eucalyptus, Clove, Cinnamon and Ajwain, Antitubercular activity, MABA method.



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### Formulation and Evaluation of Metoprolol Floating Tablets using Maize Cob Husk

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Retention of dosage form in the stomach is done by several approaches. One of such approach is floating system. Floating systems work on the principle of increasing the gastric residence time thereby increasing the bioavailability and to release the drug in a controlled manner. Several polymers are available for floating tablets, but also there is a need to develop new, effective and efficient polymers for controlled release floating tablets. In the present work Floating tablets of metoprolol succinate were prepared employing maize cob husk as a natural floating agent and compared with widely studied polymer HPMC. All the floating tablets prepared by using different concentrations of maize cob husk and HPMC were of good quality with regard to hardness, drug content and friability.

Keywords: Metoprolol succinate, HPMC, Maize cob husk



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## Formulation and Evaluation of Oro-Dispersible Tablets of Aceclofenac by HP- $\beta$ Cyclodextrin for Improved Patient Compliance

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The present investigation was undertaken in formulating Oro-dispersible tablets of the non steroidal anti-inflammatory drug Aceclofenac. The main objective is to enhance the quick on set of action, convenience and compliance by the elderly and pediatric patients without the problem of swallowing and using water. Aceclofenac belongs to BCS Class-II with low solubility and high permeability. The solubility of Aceclofenac is enhanced by complexing with cyclodextrins. The inclusion complexes of Aceclofenac were prepared by various techniques using HP  $\beta$  cyclodextrin in various ratios (1:1, 1:2 and 1:3). Solubility study of Aceclofenac was performed in which highest was observed for 1:2 ratio. The selected inclusion complexes were then utilized for the preparation of tablets by direct compression. Six formulae were prepared and evaluated for *in vitro* dissolution characteristics, *in vitro* disintegration time, and their physico-mechanical properties. The promising tablets (F4) showed greatest drug dissolution (more than 75% within 15 min), satisfactory *in vitro* disintegration time (45 sec) and physico-mechanical properties that are suitable for Oro-dispersible tablets. By complexation taste masking also improved. Optimized Oro-dispersible tablets were compared with marketed product by similarity and dissimilarity factors.

Keywords: Aceclofenac, Direct Compression, HP  $\beta$  cyclodextrin.



**Formulation and Evaluation of Oro Dispersible Tablets using a Natural Polysaccharide Isolated from the Raw Fruits of *Hibiscus Sabdariffa***

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Among all the dosage forms, solid dosage forms are more compliant to patients with tablets on top because of the ease of administration and minimal dose. However geriatric and pediatric patients experience difficulty in swallowing of tablets, resulting in poor adherence. Orodispersible tablets (ODTs) can be an answer to the poor compliance because ODTs dissolve and disintegrate immediately in patient's buccal cavity. The ODTs formulated with natural polymers have more demand than those manufactured from synthetic polymers because natural polymers are nontoxic, biodegradable and chemically inert. Objective: In the present study, a polysaccharide was isolated from the raw fruits of *Hibiscus sabdariffa* was investigated as a super disintegrant in the development of orodispersible tablets. Materials and Methods: Diclofenac sodium tablets were prepared separately using various concentrations (1%, 2.5%, 5%, 7.5% w/w) of isolated *H. sabdariffa* raw fruit polysaccharide (natural) and sodium starch glycolate (synthetic) as super disintegrant by the direct compression method. The pre and post compression parameters were evaluated for the prepared tablets. Stability studies were conducted on the optimized formulation (F4). FTIR studies were conducted to characterize drug excipient compatibility. Results: The formulation F4 containing 7.5 % of polysaccharide showed good wetting time when compared to formulation containing sodium starch glycolate at the identical concentration level. Hence it is considered as optimized formulation. Conclusion: The current study revealed the potential of *H. sabdariffa* as disintegrant within the formulation of ODTs. Utilization of *H. sabdariffa* raw fruits for isolation of polysaccharide serve two purposes, waste management and as an alternative source for current synthetic polymers.

Keywords: Orodispersible tablets, Sodium starch glycolate, *Hibiscus sabdariffa*.



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### Enhancement of Solubility of Glipizide by Spherical Crystallization Technique

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Solubility is the prime important parameter in development of a formulation. There are so many ways to improve solubility of many drugs. The aim of present work Glipizide is an oral hypoglycemic agent, which is a commonly prescribed drug for the treatment of patient with type II diabetes. Glipizide is a weak acid ( $pK_a=5.9$ ) practically insoluble in water. In such cases enhancement of solubility of Glipizide before formulating avoid the problem of low release rate and inadequate blood levels. Spherical crystallization is one of the method to enhance solubility of many insoluble drugs. DMF, DCM and acetone selected as good solvents, chloroform as bridging liquid and distilled water as poor solvent. Spherical agglomeration technique was optimised by setting different RPMs and finally 600 rpm was selected. The drug and excipient compatibility study were investigated by FTIR and DSC. The crystallinity was identified by XRD. There was no interaction between drug and excipients. By observing the XRD prepared spherical agglomerates were spherical in shape. The saturation solubility study revealed that aqueous solubility of Glipizide was increased in spherical agglomerates than that of pure Glipizide. There was drastic increase in solubility of Glipizide in GD+DMF spherical agglomerates (12.75) and slight increase in solubility of Glipizide in GD+DCM (1.38) and GD+Acetone (1.05) spherical agglomerates. The micromeritics studies of revealed that the flow properties of all the prepared spherical agglomerates were better than the pure Glipizide.

Keywords: Glipizide, DMF, DCM , Acetone, Spherical Agglomeration technique.



In vitro Anti-Oxidant Activity of Ethanolic Extract of Flowers *Hymenocallis littoralis*

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*Hymenocallis littoralis* is commonly referred as Beach spider Lilly, is a medicinal plant and ornamental plant. It is used as emetic, and has shown wound healing, anti-viral, antineoplastic and cytotoxic properties. *Hymenocallis littoralis* Flowers were extracted using ethanol as solvent. *Hymenocallis littoralis* have been evaluated for its anti-oxidant activity of ethanolic extract of flowers of *Hymenocallis littoralis* on male Wistar albino rats. The aim of this research is to explore the anti-oxidant potential of this selected plant material, by using antioxidant activity of *Hymenocallis littoralis* with standard drug such as Ascorbic acid is used by using three methods they are 2,2-Diphenyl-1-picrylhydrazyl (DPPH), Reducing power scavenging activity. Hydrogen peroxide radical. This result shows that the ethanolic extract of *Hymenocallis littoralis* have effective oxidative properties that closely resembles the standard antioxidant drug like Ascorbic acid.

Keywords: *Hymenocallis littoralis*, Ethanol, 2,2-Diphenyl-1-picrylhydrazyl, Ascorbic acid.



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## Screening and Isolation of Cyclodextrin Glycosyl Transferase Producing Bacteria from Soil Samples

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The present investigation was undertaken to assess the alkaliphiles isolated from paddy fields for the production of CGTase and to explore their biotechnological potential. Alkaline soil samples were collected, suspended in sterile saline, and pasteurized. Hundred  $\mu\text{L}$  of such samples was plated on 90mm plates of the screening medium. Clear halos were obtained around seven of the several hundred bacteria so screened. All these were purified by repeated streaking to obtain pure cultures. The bacteria which gave the largest halo were selected for further studies. The pH around the halo was checked and was found to be high ruling out the possibility of the halo being attributed to acid production by the bacteria. No halo was observed on the control plate without starch thereby confirming that the halo production is not due to the degradation of phenolphthalein.

Keywords: Alkaliphiles, Phenolphthalein, Control plate.



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### Isolation and Identification of Cellulase Producing Bacteria from Mangrove Soil.

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The main goal of the present study is to isolate a cellulase producing microorganism from mangrove soil. As the mangrove forests provide habitat for thousands of species at all levels of marine and forest food webs, from bacteria to animals. A total of twenty microorganisms were isolated from mangrove soil (Collected from Pichavaram Mangrove Forest) and labelled as MSI-1 to MSI-20 basing on their morphological features. The twenty isolates were screened for cellulase producing ability as this enzyme has potential applications in different industries. Among the twenty isolates two strains were exhibited cellulase producing ability and MSI-18 exhibited significant cellulose hydrolyzing ability. MSI-18 further tested by congo red method and used in submerged fermentation. 16.24 U/mL of maximum cellulase activity was obtained with MSI-18 strain under optimized cultural conditions. The isolate was identified as Bacillus sp., based on morphological and biochemical characteristics.

Keywords: Bacillus sp, Pichavaram Mangrove Forest, Cellulose, Congo red method, Submerged fermentation



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**Evaluation of *in vitro* Antimicrobial and *in vivo* Wound Healing Activity of Polyherbal Formulations in Albino wistar Rats**

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Wounds are external injuries in consequence of tearing or opening of the skin. In this study we have formulated an herbal ointment which showed better tissue regeneration and healing capacity. In the present scenario multiple herbs are used together in a particular ratio in order to give a therapeutic effect in a better way with reduced toxicity. In consequence to such intervention, the present study was intended to develop three poly herbal mixtures 1, 2 & 3 in different concentration ratio of ethanolic leaves extracts of *Azadirachta indica* (Neem), *Momordica charantia* (Bittergourd) and *Nyctanthes bortristis* (Night Flowering Jasmine) for *invitro* antimicrobial activity in *Bacillus subtilis* and *Pseudomonas aeruginosa* culture medium. The poly herbal mixture 3 showed greater zone of inhibition (mm) for *Bacillus subtilis* and (mm) for *Pseudomonas aeruginosa* in comparison to other mixtures. Ofloxacin (10µg /ml) is considered as standard drug to compare the antimicrobial activity. Based on antimicrobial activity the selected herbal extracts are further subjected to prepare three ointments, such as PHO I, PHO II and PHO III in three different ratios and are evaluated for wound healing activity in excision wound model in albino wistar rats. The PHO III showed highest percentage (%) of wound closure when compared to disease control group. The soframycin 2% ointment is used as standard to compare wound healing activity. The findings of the study revealed the accelerated wound healing activity of Polyherbal ointment might be due to their antimicrobial activity. The therapeutic effect of each selected herbal extract is well documented for its antioxidant, anti-inflammatory, and wound healing, antibacterial activity due to presence of flavonoids, flavones and glycosides.

Keywords: Soframycin, *Azadirachta indica*, *Momordica charantia*, *Nyctanthes bortristis*

