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Formulation and Evaluation of Orodispersible Tablets of Diclofenac Sodium

Dr. Ramesh D. Ingole , Principal, DJPS College of Pharmacy

Abstract:

Diclofenac sodium (DS) a non-steroidal anti-inflammatory drug (NSAIDs) has a bitter taste and is a local stomach irritant. It is used in variety of pain including body pain, tooth ache. Or dispersible tablets have advantages that is bypasses GI tract and hepatic portal systems which will lead to an increase in the bio viability. Diclofenac sodium has a bitter taste which will hinder patient compliance. Thus, the aim of the study was to prepare taste masked drug resin complex (DRC) using ion exchange resin (Indion 234) and prepared DRC was directly compressed to obtain Orodispersible tablets. DRC was evaluated for variables like drug: resin ratio, pH, soaking time, temperature and stirring time on drug loading and taste masking. Orodispersible tablets were prepared by direct compression technique using Camphor as subliming agent to yield porous tablets. A 32 factorial design was implemented for the optimization of the formulation. The concentration of Indion 234 (X1) and concentration of camphor (X2) were selected as independent variables while disintegration time (Y1) and % friability (Y2) as dependent variables. The prepared tablets were evaluated for hardness, friability, disintegration time, wetting time and in vitro drug release. The formulation batch (F7) containing 5.1 mg Indion 234 and 14 mg Camphor exhibited better results with respect to disintegration time, friability and drug release.

MICROSPONGE DRUG DELIVERY SYSTEM FOR TOPICAL DELIVERY

Mr. Pimple R.G., Assistant Professor, DJPS College of Pharmacy

Abstract:

Microsponge Delivery System (MDS) is a unique technology for the controlled release of topical agents and consist of macro porous beads, typically 10-25 microns in a diameter, loadedwith active agent. Microsponges are porous, polymeric microspheres that are mostly used for prolonged topical administration. Microsponges are designed to deliver a pharmaceutically active ingredient efficiently at minimum dose and also to enhance stability, reduce side effects,and modify drug release profiles. When applied to the skin, the microsponge releases its activeingredient on a time mode and also in response to other stimuli (rubbing, pH, etc.). MDS technology is being used currently in cosmetics, over-the-counter (OTC) skin care, sunscreensand prescription products. Conventional preparations have some disadvantages like unpleasantodour, greasiness and skin irritation. These problems are overcome by microsponge delivery system. Microsponge based drug delivery system produces controlled released action. It also produces site specific and target organ action produced. Microsponge (MDS) mainly developed in topical drug delivery as well as oral controlled delivery system. It also used in cosmetic formulations.

Forced degradation and stability indicating studies of drugs

Kabra Pritishchandra Sureshchandraji, Assistant Professor, DJPS College of Pharmacy

Abstract:

Forced degradation is a degradation of new drug substance and drug product at conditions more severe than accelerated conditions. It is required to demonstrate specificity of stability indicating methods and also provides an insight into degradation pathways and degradation products of the drug substance and helps in elucidation of the structure of the degradation products. Forced degradation studies show the chemical behavior of the molecule which in turn helps in the development of formulation and package. In addition, the regulatory guidance is very general and does not explain about the performance of forced degradation studies. Thus, this review discusses the current trends in performance of forced degradation studies by providing a strategy for conducting studies on degradation mechanisms and also describes the analytical methods helpful for development of stability indicating method, degradation products that can be studied to determine the stability of the molecule.

SUBSTITUTED HYDRAZONES: A VERSATILE PHARMACOPHORE

Suryawanshi Milind Balaji, Assistant Professor, DJPS College of Pharmacy

Abstract:

Hydrazone is a class of organic compounds with general structure $R_1R_2C=NNH_2$. Hydrazone derivatives of carbonyl compounds are synthesized by the action of different hydrazine on ketones or aldehydes. Hydrazones possessing an azometine -NHN=CH- proton has been reported to be substituted with a number of heterocycles such as pyridine, furan, isooxazole, isoindole, thiophene, pyrimidine constituting an important class of compounds for new drug development. Therefore, many researchers have synthesized these compounds as target structures and evaluated their biological activities. Literature studies revealed that hydrazonesand various substituted hydrazones are associated with a broad spectrum of biological activitiessuch as antioxidant, antibacterial, anti-inflammatory, analgesic, antiviral, antifungal, antiplatelet, antitubercular, anticonvulsant, antimicrobial, and anticancer activities etc. Nifuosroxazide, Isoniazid, isocarboxazide, nitrofurazone, furazolidone and nitrofurantoin are some marketed hydrazone derivatives. The present review focuses on the different biological activities possessed by different hydrazones.

Study Quality and Stability of matrix tablet containingDexamethorphan

KanchanS. Jamkar, Assistant Professor, DJPS College of Pharmacy

Abstract:

Dexamethorphan has been used as an expectorant, detoxificator, anti-allergic, and antioxidant., grown in Mongolia by previous study. The objective of the study was to develop prolonged release matrix tablet with hepatoprotective effect and to evaluate their pharmacotechnical qualities and stability.The matrix tablets were prepared by wet granulation method. In order to develop appropriate tablets various excipients such as matrix former, diluents, binder, lubricant and glidiant were added. APIs and matrix former, diluent and binder were mixed properly and were granulated with the 5% solution of PVP K-30 as a binder solution. The wet mass was granulated by wet granulator through the sieve with 2 mm diameter holes and generated wet granules were dried at room temperature. Dry granules were lubricated with talc and magnesium stearate. The matrix tablets were prepared by the compression of the tablet mixture using rotary tablet machine. The quality of the prepared tablets was evaluated according to Mongolian National Pharmacopoeia's methods by criterias such as appearance, average weight, weight variation, hardness, friability, mocrobiological contamination and in-vitro dissolution study. Licozinat matrix tablets contained monoammonium glycyrrhizinate 140 mg; glycine 50 mg; LD-methionin 50 mg in each tablet.Formulations were evaluated and satisfied the quality criteria by Dexaamethasone National Pharmacopoeia methods. The stability of matrix tablet tested by long term method for 12 months and by accelerated method for 6 months. stability testing results by both long term and accelerated method, Licozinat matrix tablet was stable for 12 months. Stability testing of matrix tablet is continuing by long term method.Controlled release "Licozinat" matrix tablets were prepared by wet granulation method. Formulation (F5) containing 20% HPMC K4000 releases in the desired manner and was determined to be the appropriate design. Licozinat matrix tablet was stable for 12 months. Stability testing of matrix tablet is continued by long term method.

Formulation and characterization of Novel nano-gel

Mr. Kiran N. Khodke, Assistant Professor, DJPS College of Pharmacy

Abstract:

Nanoparticles synthesized by combining a hydrogel and a cross-linked hydrophilic polymer. Nanogels are robust nanoparticles that could be used to deliver active drug compounds in controlled drug delivery applications. Nanogels drug delivery system is more effective and safer for both hydrophilic and hydrophobic drugs due to their chemical composition and formulations that are inappropriate for other formulations. Nanogels have enabled enlargement of functionalized nanoparticles, which act as a drug carriers that can be loaded with drugs and other active material to be released in a controlled manner at specific site. This review aims at providing general introduction on nanogels, recent synthesis methodology and their novel application in different fields.

REVIEW ON COUMARIN AND ITS DERIVATIVES

Karpe C.E., Assistant Professor, DJPS College of Pharmacy

Abstract*:*

Coumarins owe their class name to ‘Coumarou’, the vernacular name of the tonka bean (*Dipteryxodorata*Willd.,Fabaceae). Coumarin is classified as a member of the benzopyrone family of compounds, all of which consist of a benzene ring joined to a pyrone ring. Various methods are used for the synthesis of coumarin derivatives. Coumarin is used for treatment ofHigh Protein Edema (HPE). Coumarin has been shown to activate cells of immune system andused in treatment of cancer. Coumarins are competitive inhibitors of Vit. K,thus act as anti- coagulant.Coumarine and its derivatives are highly effective against inflammatory response.Both coumarin and itsderivatives have shown promise as potential inhibitors of cellular proliferation in various carcinoma cell lines.

Solubility Enhancement of Low Water Soluble Drug Cefpodoxime

Mr. Hanuman S. Kolse , *Assistant Professor, DJPS College of Pharmacy*

Abstract:

The aim of this present study was to enhance the solubility and bioavailability of cefpodoxime through Complexation with 2 hydroxyl-β-Cyclodextrin.

Cefpodoxime is belonging to BCS class 1V with poor solubility and poor permeability. So it is difficult to formulate this type of dosage form because they show maximum side effects and also have low therapeutic index. So, solid dispersion is one of the most widely used techniques to enhancement the solubility and dissolution of poorly water soluble drugs.

Cefpodoxime is a poorly water soluble antibiotic drug. Cefpodoxime is a hydrophobic molecule that is practically insoluble in aqueous media and exhibits slow intrinsic dissolution rate. It has slow erratic and complete oral administration. Various different technologies are available for the preparation of solid dispersions like melting method, solvent method,and freeze drying method, spray drying, melt extrusion method, Lyophilisation technique etc. In the Preformulation studies, cefpodoxime was characterised by various physiochemical properties such as UV, FTIR Study, Melting point, Partition coefficient calibration curves and solubility profile. The drug was formulated as solid dispersion with β- Cyclodextrin as a carrier. Different ratios of solid dispersion were prepared 1:1, 1:4, 1:6 by kneading techniques. It was concluded that the solubility of cefpodoxime drug was increase by using solid dispersion method.

Management of Treatment Rersistant Depression

Tengse K.A., *Assistant Professor, DJPS College of Pharmacy*

Abstract:

Treatment Resistant Depression (TRD)is subset of Major Depressive Disorder characterized by an inadequate response to at least two trials of anti-depressant treatment at adequate dose and duration in monotherapy. Critical factors that influence the probability of response to antidepressants include non-adherence, misdiagnosis of disorder failure to recognize a general medical disorder insufficient dose and/or inadequate duration, ongoing alcohol or substance abuse. Several subtypes of depression also respond differentially to various antidepressants. For example, psychotic depressions often do not respond to antidepressant monotherapy. Number of therapeutic options are there for management of TRD. Traditional pharmacological approach includes augmentation by the aid of lithium, triiodothyronine (T3) also second generation antipsychotics may be used. Optimizing, combining and switching classes of antidepressant pharmacotherapy is best suitable option. Psychotherapeutic approaches may be undertaken in combination with somatic or pharmacological treatments. Brain stimulation by electroconvulsive therapies & Repetitive Transcranial Magnetic Stimulation is the established best therapeutic option for TRD. Magnetic seizure therapy (MST) is a powerful technique for the management of TRD. In Deep Brain Stimulation (DBS), a permanent neurosurgical implant is placed in the brain, with a specific target to activate or silence.Vagus nerve stimulation (VNS) is proposed to modulate brain activity via stimulation of the tenth cranial nerve, the vagus nerve. The only registered drug for TRD is the NMDA receptor antagonist, S-ketamine, but add-on therapies with second-generation antipsychotics, certain nutritive, anti-inflammatory and neuroprotective agents seem to be effective.

ACRYLAMIDE MEDIATED CARDIOTOXICITY AND ITSPROMISING TREATMENTS

Nemane Shraddha Tukaram, Assistant Professor, DJPS College of Pharmacy

Abstract:

Acrylamide is, α, βunsaturated carbonyl derivative, a food borne chemical, belongs to class Type-2 alkenes. It is utilized in industry to synthesize polymers, gels and have various commercial applications. Exposure to humans can be from diet and external sources, a need exists to develop the understanding of its distribution in food and environment. Acrylamide ispresent in food rich in carbohydrates and is derived from heat-induced reaction between the free amino acid (asparagine) and reducing sugar. It is reported that acrylamide exposure has been linked to major organ system toxicity. The possible reasonsforcardiotoxicity of acrylamide is, its high reactivity and ability to bind cell thiols, amine group in proteins, DNA bases, and induces oxidative stress and proinflammatory effects. It is evident that oxidativestress possesses important effect in pathogenesis of CVD (cardiovascular diseases).Given the pervasive environmental and endogenous presence of these potentially toxic compoundsdiscussion of molecular mechanism and possible toxic risk could be important. Various strategies can be adapted for acrylamide toxicity treatments that are, the agronomical approach, technological approach and pharmacological approach.

RECENT ADVANCES IN SUBSTITUTED THIAZOLIDINONES ASANTICANCER AGENTS

Pentewar Ram Shankarao, Assistant Professor, DJPS College of Pharmacy

Abstract:

4-Thiazolidinones are a saturated pharmacophore of thiazole that possesses diversity in the biological activities. 1, 3-Thiazolidin-4-ones are heterocycles that have an atom of sulphur at position 1, a nitrogen at position 3 and a carbonyl group at position 4. Anti-tumour propertiesof 4-thiazolidinones are related to their affinity to anticancer bio targets such as a JNK stimulating phosphates-1 (JSP-1), tumour necrosis factor TNFα, anti-apoptotic bio complex Bcl-XL-BH3, integrin αvβ3, etc. 4-thiazolidinone derivatives with antitumor activity on human lung cell line (H460 and H460/TaxR), colon cell line (HT29), breast cancers cell line (MCF-7 & MDA-MB 231), cervical cell line, leukaemia, renal & prostate cell line have become a promising area of research. 4-Thiazolidinone also have antiviral, anti-fungal,antibacterial, anti-inflammatory, anti-convulsant, anti-diabetic, anti-hyperlipidemic, cardiovascular and anti- tubercular. The compounds such as ralitoline (anti-convulsant), etozoline (anti-hypertensive), pioglitazone (hypoglycemic), and thiazolidomycin (activityagainst streptomyces species) have already been successfully introduced in the market.

UTILIZING EUDRAGITS FOR FORMULATION AND EVALUATION OFCHRONOTHERAPEUTIC DOSAGE FORM

Pulgamwar Gajanand Venkatrao, Assistant Professor, DJPS College of Pharmacy

Abstract:

The objective of the present investigation was to design a chronotherapeutic dosage form containing microspheres of antihypertensive drug. The microspheres of drug were prepared using Eudragit by optimization technique through application of Design Expert® software. Themicro particles were prepared by emulsion solvent evaporation method where the effect of two independent variables drug: polymer ratio and stirring speed on two response variables particlesize and entrapment efficiency was investigated. The prepared formulations were evaluated forin-vitro evaluation study parameters viz. micromeritics, mean particle size, percent yield, entrapment efficiency drug release profile. The optimized microsphere formulation was then incorporated into treated hard gelatin capsule shell. Validation of optimization model and Statistical interpretation of results was done using Analysis of Variance (ANOVA) which indicated that the independent variables had significant effect on response variables. The wholecapsular system was evaluated for lag time and in-vitro drug release. The results indicated thatthe optimized double coated capsule shells showed an extended release of drug from microspheres after a lag time of 4 hrs. Conclusively, the dosage form to be dosed at bed time was successfully prepared that has the potential for effective chronotherapeutic management of hypertension.

Use of flower extract of certain species Malvacea family as a Compound Indicator

Suryakar Vijaykumar Bapurao, Assistant Professor, DJPS College of Pharmacy

Abstract:

Indicators used in titration show well-marked changes of colour in certain intervals of pH. Most of these indicators are organicd yes and are of synthetic origin. The environmental pollution caused by chemical industries in the synthesis of organicdyes had made scientist in developing country to enter in to an era, in which plant products serveas an alternative to synthetic products. Herbs are non-polluting renewable supplies of chipper products for the world growing population,natural pigments in plants are highly coloured substances and may show color changes with variation of pH.

Formulation and Evaluation of Anti-inflammatory transdermal patch

Lad Susihlkumar Udhavrao, Assistant Professor, DJPS College of Pharmacy

Abstract:

Transdermal delivery is a painless method of delivering drugs systemically by applying a drug formulation onto intact and healthy skin. The objective for formulation of anti-inflammatory transdermal patch is to convert the herbal extract into a novel dosage form, to formulate and characterized transdermal patch, to provide direct entry of extract into blood circulation, to provide a synergistic effect of lemongrass oil and to check the antimicrobial activity of the formed formulation. The development of TDDS technology is widely recognized as the development of a mass delivery methodology, which makes it the preferred drug injection modality for transdermal delivery across skin types, while preventing first-pass metabolism and other sensitivities associated with various alternative drug administration routes. In TDDSs, drugs can be delivered through the skin to the systemic circulation. Drugs are generally reliably and safely delivered through TDDS and are safe and stable from biochemical modifications until they reach the target tissue. TDDS is non-invasive, non-allergenic, and has a set duration and dose delivery method, which allows for uniform distribution of drugs at prescribed and controlled rates. Many new and old formulations are in the process of improving the bioavailability of low-absorption drugs via easy routes of administration that allow large doses to be administered over a long period of time. Therefore, the TDDS technology is growing rapidly in the pharmaceutical field and has succeeded in capturing key value in the market for biomedical applications as a formulation system that can improve drug delivery through topical routes.

Antibacterial activity of selected Thymus vulgaris medicinal plant in vitro

Dahiphale Vijay Bagirao, Assistant Professor, DJPS College of Pharmacy

Abstract:

Background Antimicrobial resistance has become a serious problem of public health. It creates a constant need for either new antimicrobial compounds or inhibitors of mechanisms that underlie antibiotic resistance. Thymus valgaris is one of the well-known South-East Asia countries where natural substances are widely used for treatment of many diseases, especially for infectious diseases. As such, the study of antibacterial activity of plants traditionally used by Thymus valgaris traditional healers to treat infectious diseases is important. This study aimed to screen the antimicrobial activity of 138 extracts from 67 plants that are traditionally used by Thymus valgaris traditional healers. Methods The plants were collected in eight provinces and cities of Thymus valgaris. The extraction was performed using ethanol:water (50/ 50 v/v) to obtain the majorities of the compounds present in plants. The antibacterial activities of plants extracts were first tested against reference strains, Staphylococcus aureus (ATCC 6553; cocci; Gram positive bacteria) and Pseudomonas aeruginosa (ATCC 9027; rod; Gram negative bacteria), and then against clinical strains using micro-dilution and macro-dilution tests, respectively. Results A total of 138 extracts isolated from 78 species of plants were tested. Most of the extracts were very active against S. aureus but less active against P. aeruginosa. Only 5 extracts derived from 5 plants were highly active against both standard and isolated strain of S. aureus. Three plant extracts were highly active against standard strain of P. aeruginosa but weakly active against its isolated strain.

Preclinical studies of Euphorbia hirta against DEN-2 dengue infection

Choure Hanumant Vachistha , Assistant Professor, DJPS College of Pharmacy

Abstract:

Dengue is still a major problem in Malaysia and causing high mortality. There is no specific treatment for dengue and one of the strategy is to study the effect of herbal medication on dengue. The aim is to review the results of the series of preclinical studies that has been conducted for Euphorbia hirta in treating dengue fever. Methods Several preclinical studies were conducted namely the phytochemical, efficacy and toxicity studies. Phytochemistry studies were conducted on water extract of Euphorbia hirta with chromatography and spectrometry analysis. The in vitro plaque assay and the in vivo studies on AG129 mice were conducted with non-mouse adapted Malaysian dengue virus type 2 (DEN-2) infection. The mouse model of DENV-infection that closely mimicked the human disease was established and used to study the immunomodulatory activity involving specific cytokines, the endothelial cell biology in dengue infection and the effect of dosing on the day of infection. The genotoxicity and general toxicology studies were also conducted. in a clinical trial. The phytochemistry studies allowed confirmation of the herb identity and consistency of the chemical composition for efficacy and toxicity studies. Plaque assay and the in vivo studies have confirmed that the extract of Euphorbia hirta do not kill the dengue virus. The extract affected the immunomodulatory system and the endothelial cells of the blood vessels. These provide clues to the control of the cytokine ‘storm’ and the vascular leakage that is the characteristic of dengue haemorrhagic fever. A previous study has confirmed that Euphorbia hirta juice increases the platelet by inducing the platelet production in the bone marrow. The results of the toxicity studies were also favourable. Conclusions The preclinical studies has provided evidence that Euphorbia hirta extract worked on different pathogenesis of dengue fever and can be further studied in a clinical trial.

Needle free injection technology A novel drug delivery

Hange Dipak Dagdu, Assistant Professor, DJPS College of Pharmacy

Abstract:

Needle free injection technology is an extremely broad concept which include a wide range of drug delivery systems that drive drugs in the skin using any of the forces as Lorentz, Shock waves, pressure by gas or electrophoresis which propels the drug through the skin, virtually nullifying the use of hypodermic needle. This technology is not only touted to be beneficial for the pharma industry but developing world too find it highly useful in mass immunization programmes, bypassing the chances of needle stick injuries and avoiding other complications including those arising due to multiple use of single needle. The NFIT devices can be classified based on their working, type of load, mechanism of drug delivery and site of delivery. To administer a stable, safe and an effective dose through NFIT, the sterility, self life and viscosity of drug are the main components which should be taken care of. Technically superior needle-free injection systems are able to administer highly viscous drug products which cannot be administered by traditional needle and syringe systems, further adding to the usefulness of the technology. NFIT devices can be manufactured in a variety of ways; however, the widely employed procedure to manufacture it is by injection moulding technique. There are many variants of this technology which are being marketed, such as Bioject® ZetaJetTM, Vitajet 3, Tev-Tropin® and so on. Larger investment has been made in developing this technology with several devices already being available in the market post FDA clearance and a great market worldwide.

FORMULATION AND EVALUATION OF CALENDULA AND POMELO PEEL ANTI-ACNE GEL

Alure Bhalchandra Shivajirao ,Assistant Professor, DJPS College of Pharmacy

Abstract:

The herbal ball has been used as a Thai traditional medicine for relieving many diseases including acne. However, the application process of the herbal ball in practice is complicated and time consuming. The objective of this work was to utilize an herbal ball extract to formulate a gel to reach a more favorable use of the herbal ball for acne treatment. An herbal ball consisting of the Benchalokawichian remedy and the stem bark powder of was prepared. The obtained herbal ball was steamed and squeezed to obtain the extract. Gel formulations containing the herbal ball extract at concentrations of 0.1, 1 and 5% w/w were prepared based on a carbomer gel. The herbal ball extract had antioxidant and anti activities and minimum bactericidal concentration The 5% w/w gel formulation had antimicrobial activity against P. acnes, showing an inhibition zone value of This indicates that the developed gel formulation has potential for acne treatment. In comparison to the traditional method of herbal ball usage, the application of herbal ball extract in the form of gel should be more convenient to useCalendula Calendula officinalis, Garden marigold, Pot marigoldThe flower petals of the calendula plant (Calendula officinalis), or pot marigold, have been used formedicinal purposes since at least the 12th century Calendula is native to Mediterranean countries butsnow grown as an ornamental plant throughout the world. Calendula has high amounts of flavonoids, plant-based antioxidants that protect cells from being damaged by unstable molecules called free radicals Calendula appears to fight inflammation, viruses,and bacteria. cuts, as well as the minor infections they cause. Calendula also has been shown to help.

HPLC Method Development and Validation

Dr. Ramesh D. Ingole , Principal, DJPS College of Pharmacy

Abstract:

HPLC is the dominant separation technique in modern pharmaceutical and biomedical analysis because it results in highlyefficient separations and in most cases provide high detection sensitivity. Most of the drugs in multi component dosageforms can be analysedby HPLC method because of the several advantages like rapidity, specificity, accuracy, precisionand ease of automation in this method. HPLC methods development and validation play important roles in new discovery, development, manufacture of pharmaceutical drugs and various other studies related to humans and animals. An analyticalprocedure is developed to test a defined characteristic of the drug substance or drug product against established acceptancecriteria for that characteristic. An appropriate mobile phase, column, column temperature, wavelength and gradient must be found that affords suitable compatibility and stability of drug as well as degradants and impurities. This review gives information regarding various stages involved in development andvalidation of HPLC method. Validation of HPLC method as per ICH Guidelines covers all the performance characteristics of validation, like Accuracy, precision, specificity, linearity, range and limit of detection, limit of quantification, robustness And system suitability testing.

SPIRONOLACTONE INDUCED GYNECOMASTIA: A CASE REPORT

Mr. Pimple R.G., Assistant Professor, DJPS College of Pharmacy

Abstract:

Gynaecomastia is generally caused by increased ratio of free circulating oestrogens/androgens or altered effects of these hormones on their correspondent intracellular receptors in the mammary tissue. The pathologies influencing the levels of circulating sexual hormones (i.e. testicular or adrenal neoplasias, hepatic cirrhosis, hyperthyroidism hypogonadism obesity, refeeding syndrome. The active principles known for most frequently causing gynecomastia are exogenous oestrogens, antiandrogens, 5 alpha reductase inhibitors, spironolactone and cimetidine. Medical history plays a fundamental role in the diagnosis of drug induced gynecomastia. A large variety of drugs have been implicated in its pathogenesis and they may induce gynecomastia by decreasing testosterone production ,increasing peripheral conversion of testosterone to estradiol and displacing estradiol from sex hormone binding globulin. We present a case report of 41 old male patient affected by spironolactone induced gynecomastia and discuss its pathogenetic mechanism.

A PRACTICAL APPROACH TO RP HPLC ANALYTICAL METHOD DEVELOPMENT

Kabra Pritishchandra Sureshchandraji, Assistant Professor, DJPS College of Pharmacy

Abstract:

High performance liquid chromatography is one of the most widely used tools to identify and quantify potency in drug substances and drug products. Analytical method development and validation are two very critical processes performed before release of a method for use in Quality Control department. This article focuses on stepwise practical approach towards developing a RP HPLC assay method. The various contributing parameters and its effect on the performance of the RP HPLC analytical method being developed are described simply, such that a new chromatographer is able to develop a method with the understanding of the RP HPLC method development process and its parameters.

APPLICATION OF SIMULTANEOUS EQUATION METHOD FOR THE DETERMINATION OF AZITHROMYCIN AND CEFIXIME TRIHYDRATE IN TABLET FORMULATION

Suryawanshi Milind Balaji, Assistant Professor, DJPS College of Pharmacy

Abstract:

A simple, accurate, and precise UV-spectrophotometric method has been developed for the simultaneous estimation of azithromycin (AZI) and cefixime trihydrate (CEFI) in tablet formulation. The method was based on employing simultaneous equation method for the analysis of both drugs. AZI and CEFI have shown absorbance maxima at 222 and 289 nm in methanol, respectively. The linearity was obeyed in the concentration range of 10-50µg/ml for both drugs, with a significantly high correlation coefficient (r2 = 0.999). The limits of detection for AZI and CEFI were 0.81 and 1.52 µg/ml, respectively, and the limits of quantitation for AZI and CEFI were 2.40 and 4.60 µg/ml, respectively. The suitability of the developed method for quantitative determination of drugs was proved by validation. The method was successfully used to analyze a tablet formulation.

A REVIEW: POLYHYDROQUINOLINE ACT AS BIOLOGICAL ACTIVE MOLECULES

KanchanS. Jamkar, Assistant Professor, DJPS College of Pharmacy

Abstract:

1,4-Dihydropyridine (1,4-DHP) and polyhydroquinoline have a six membered aromatic rings. Pyridine ring system represents the major class of nitrogen heterocycles and its analogues exhibited diverse biological and physiological activities. Polyhydroquinolines, which are structurally related to DHPS, are another important group of nitrogen containing heterocycles that have attracted much attention because of their diverse therapeutic and pharmacological properties, such as their ability to modulate calcium channels. Polyhydroquinolines have been synthesized under mild conditions augmented by conventional heating, microwave irradiation, and uitrasound. Different polyhydroquinoline derivative synthesis were studied by using the reaction of dimedone, ethyl acetoacetate, substituted salicylaldehyde and ammonium acetate in ethanol in the presence of differ catalyst. All the synthesized derivatives evaluated were biologically active they showed anticancer activity, antibacterial activity, antifungal activity, antimalarial activity, antituberculosis activity, antihypertensive activity, anticoagulant activity. Multicomponent reactions to produce a particular product were performed by the one-pot MCR's methodology that offers significant advantages over usual bimolecular reactions.

MOLECULAR IMPRINTING

Mr. Kiran N. Khodke, Assistant Professor, DJPS College of Pharmacy

Abstract:

Molecularly imprinted polymers have been used in a variety of analytical procedures in analytical separation science, including liquid chromatography, capillary electro- chromatography and capillary electrophoresis, immunoassay, and elective sorbent in chemical sensors. The ability to create sorbents with selectivity pre-determined for a specific substance or group of structural analogues of environmental and biological materials is a benefit of imprinted polymers. Imprinted polymers' increased selectivity over traditional sorbents may result in clearer chromatographic traces in subsequent analytical procedures. In addition, problems like peak broadening and tailing that are often related to imprinted polymers in chromatography are not present in the solid phase extraction application. As chiral stationary phases for enantiomer separations, imprinted polymers have been the subject of the majority of liquid chromatographic experiments. In capillary electro chromatography, the use of imprinted polymers as selective sorbents has also been demonstrated. A method for producing artificial recognition sites on polymer matrices that complement the template in terms ofsize, shape, and spatial arrangement of functional groups is known as molecular imprinting. Molecularly imprinted polymers (MIP) have a high selectivity and affinity for the target molecules employed in the moulding process, which makes them an ideal polymer for use with molecular imprinting techniques.

STEREOCHEMISTRY

Karpe C.E., Assistant Professor, DJPS College of Pharmacy

Abstract:

The study of the static and dynamic features of the molecules' three dimensional forms is known as stereochemistry. It has long offered a base for comprehending both structure and reactivity. At the same time, stereochemistry is a legitimately fascinating area of study in and of itself. Simply said, the visual beauty of chemical structures and the exciting way that this area of study combines chemistry, geometry, and topology to investigate three-dimensional shapes intrigue many scientists. Additionally, stereochemistry has a number of extremely significant practical implications. Because the components of life—amino acids, nucleotides, and sugars— are chiral and manifest in nature in enantiomerically pure forms, natureis intrinsically chiral. Therefore, any materials developed by humans to engage withor alter nature interact with a chiral environment. For bioorganic chemists, this is a crucial topic, and for pharmaceutical chemists, it is a practical one. To ensure that both enantiomers of a medicine are safe, the Food and Drug Administration (FDA) now mandates that it be produced in enantiomerically pure forms or subjected to stringent testing. This study, thus focuses on the various aspects of stereochemistry that can improve and modify the chemical activities and reactivity.

STUDY OF NEW SYNTHESIZED DERIVATIVES OF PYRAZOLES

Mr. Hanuman S. Kolse , Assistant Professor, DJPS College of Pharmacy

Abstract:

Five-membered heterocyclic molecules known as pyrazoles have contributed significantly to the theory of heterocyclic chemistry. These substances are widely used as the primary structural component of a wide range of substances with biological properties like antifungal, anticancer, antiviral, antibacterial, anti tubercular, and antiphrastic, in addition to important medicinal and agrochemical activities. An effort was made to create a simple and practical method of synthesising substituted pyrazolines by reacting aromatic aldehyde phenyl hydrazones with 4- methoxy cinnamonitrile while Chloramine-T was present. Using D-glucose as the starting point, this could prove to be a methodology for the synthesis of glucosyl pyrazole derivatives. The proposed microwave-mediated solvent-free techniques produced good reaction rates and yields, indicating that these steps can be regarded as simple, efficient, and environmentally sustainable synthetic approaches to produce pyrazole derivatives. Compared to the conventional process, this one avoids utilising very dangerous substances while yet offering an efficient way to make sugar-heterocyclic derivatives. The EATOS software, particularly in relation to the novel "one-pot" approach, validated this.

DESIGN, SYNTHESIS AND INVITRO ANTI MICROBIAL ACTIVITY OF BENZIMIDAZOLE DERIVATIVES.

MS. Shinde Jayshree Birju , Assistant Professor, DJPS College of Pharmacy

Abstract:

Benzimidazoles possess one of the most, useful biological activities. Benzimidazoles are utilizedin many therapeutic applications such as anti inflammatory, anti anxiety and anti microbial compounds. We have developed a simple methodology for the preparation of substituted Benzimidazoles derivatives (HW1 –HW7). The direct condensation of 0- phenlenediamine (1 mmole) and appropriates aliphatic aromatic carboxylic acid (1 mmol) gave the required 2-substituted 1H Benzimidazoles (HW1 –HW7) in 60 to 85 % yields. All the synthesized compounds were characterized by using spectral techniques such as IR HNMR13CNMR and MS. The advantages of this method are extremely mild technique and compliance with green chemistry protocols.

STUDY OF RECENTLY SYNTHESIZED DERIVATIVE OF QUINOLINE

Tengse K.A., Assistant Professor, DJPS College of Pharmacy

Abstract:

Quinolines and their fused heterocyclic derivatives, which have been tested for a variety of pharmacological functional groups, are a crucial class of compounds for the development of new drugs. As a result, numerous experiments have synthesised these compounds as target structures and assessed their biological activities, which include anti-cancer, anti- bacterial, anticonvulsant, anti-malarial, anti-inflammatory, and cardiovascular activities. A class ofsynthetic, broadly acting antibacterial medications is known as quinolines. Although the majority of quinolones used in medicine are fluoroquinolones, derivative chemicals work against bacteria by inhibiting bacterial DNA from unwinding and replicating within bacterial cells. Numerous techniques have occasionally been developed for the synthesis of quinoline and its derivatives by microwave-assisted, ultrasound promoted, or heterogeneous acid-catalyzed methods because they have a wide range of pharmacological activities and are also used as ligands in various biologically modelled transition metal complexes. Other others, under UV light or solvent-free circumstances. Most of these techniques that have been described in the literature have been compiled by us here. The researcher working in this topic will find this review to be of great use. And it would assist them in creating a fresh, cost effective, efficient way.

STUDY OF NEW SYNTHESIZED DERIVATIVES OF PYRAZOLES

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Abstract:

A five membered ring system known as pyrazoles are the important members of heterocyclic compounds. Pyrazole analogues have been known to exhibit antimicrobial, analgesic, anticancer, anti-tubercular, anti- inflammatory, antidepressant, anticonvulsant, ant hyperglycemic, antipyretic, antihelmintic, antioxidant and herbicidal properties. Various methods have been performed for preparation and synthesis of substituted pyrazoles by the reaction of 1,3-diketones with hydrazine's 1,3-dipolar cycloaddition of diazole compounds with alkynes and the reaction of a ß-unsaturated aldehydes and ketones with hydrazine's. A facile and convenient route of synthesis for substituted pyrazolines based on the reactions of aromatic aldehyde phenyl hydrazones with 4-methoxy cinnamonitrile in the presence of Chloramine-T has been developed. Using D-glucose as the starting material a protocol for the synthesis of glucosyl pyrazole derivatives was made.The proposed microwave- mediated solvent-free techniques produced good reaction rates and yields, indicating that these steps can be regarded as simple, efficient and environmentally sustainable synthetic approaches to produce pyrazole derivatives. Compared to the conventional process, this one avoids utilizing very dangerous substances while yet offering an efficient way to make sugar-heterocyclic derivatives. This is confirmed by the EATOS software, especially with regards to the new "one-pot" method.

INSULIN AS A PRIME DRUG FOR THE TREATMENT OF DIABETES

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Abstract:

Diabetes Mellitus is a metabolic disorder characterized by hyperglycaemia, glycosuria, and hyperlipidemia. At present, India is considered as the diabetic capital of the world. There are approximately 3.5 crore diabetics in India, and this figure is expected to increase up to 5.2 crore by 2025. Two major types of diabetes mellitus are IDDM and NIDDM. Insulin is a hormone. And like many hormones, insulin is a protein. Insulin is secreted by groups of cells within the pancreas called islet cells. Discovery of Insulin is appropriately attributed to Banting and Best. It is made up of 51 amino acids having two chains. Chain A have 21 and Chain B have 30 amino acids. The more commonly used types of insulin are Rapid acting (aspart or Lispro), Short-acting (regular insulin), Long-acting (ultralente insulin), Insulin glargine and insulin detemir. Insulin delivery systems that are currently available for the administration of insulin include syringes, insulin infusion pumps, jet injectors and pens. Insulin syringe is the most commonly used, and the most economical of all the delivery devices. Insulin pump is known as continuous subcutaneous insulin infusion therapy. A jet injector is a type of medical injecting syringe that uses a high pressure narrow jet of the injection liquid instead of a hypodermic needle to penetrate the epidermis. Pen is reusable and prefilled device. Many insulin delivery devices are under process. The purpose of this review is to focus more light on the insulin as a prime drug for the treatment of diabetes from historical era to present time.

SYNTHESIS OF NEW SUBSTITUTED ALDEHYDEDERIVATIVES

Pulgamwar Gajanand Venkatrao, Assistant Professor, DJPS College of Pharmacy

Abstract:

The aim of this research is to prove benzimidazole is a good bioactive molecule hence, it is worth to synthesis some new benzimidazole derivatives for better Anti-microbial activity by inhibiting the bacterial neucleic acid and proteins synthesis. This ability of benzimidazole is due to their structural similarities with the purine. In recent years, benzimidazole moiety have attracted much attention for their excellent biological properties, such as antimicrobial, anti inflammatory,Antitubercular, anthelmintics, and Antitumor activities. Nitrogen containing heterocyclic important compound is a benzimidazole constitute an important class of biologically active e.g. antimicrobial, antiviral, and anti□inflammatory agent's.in this research chemicals used are O-phenylenediamine, benzaldehyde, ammonium chloride, ethyacetate, hexane, ethanol, silica gel-254. In Proposed scheme for reaction O-phenylenediamine is reacted with benzaldehyde to give 2 phenyl 1-H benzimidazole. Purity of 4- hydroxybenzaldehyde was cheked by TLC method when it was run under the solvent system of ethyacetate, hexane (1;2), Rf value was found to be 0.65.several other derivatives of substituted benzimidazole can be prepared and evaluated for their antimalarial activity. Same derivatives can also be evaluated for other activities like anti tubercular, anticonvulsant. Structutal based drug design in order to optimize the pharmacological profiles.

GREEN SYNTHESIS OF BENZIMIDAZOLE

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Abstract:

Green chemistry is the new and rapidly emerging field of chemistry. It involves The utilization of a set of principles that reduces or eliminates the use or generation of Hazardous substances in the design, manufacture and application of chemical products. In Recent decades, a large number of reports related to synthesis of Nitrogen, Oxygen and Sulphur containing heterocyclic have appeared owing to awide variety of their biological Activity. In recent years, numerous reports concerning the synthesis of heterocyclicCompounds under various conditions like solvent-free, reactants immobilized on solid Support, microwave irradiation condition, green catalyst and green solvent have appeared.benzimidazole is a heterocyclic aromatic organic compound. It is an iimportan Pharmacophore and privileged structure in medicinal chemistry. It plays a very important role With plenty of rational therapeutic activities such as antiulcer, antihypertensive, analgesic,Anti-inflammatory, anti-viral, antifungal, anticancer, and antihistaminic. Because of its Importance, the methods for their synthesis have become a focus of Synthetic OrganicChemists. Therefore in the present review I tried to compile the chemistry of differentDerivative of substituted benzimidazole and some of the important methodologies used for theSynthesis. Conventional methods of syntheticreactions need longer heating time, elaborateAnd tedious apparatus set up which result in higher cost and environmental pollution inContrast to greener methods which are ecofriendly and economical.

PHYTOCHEMICAL STUDIES OF CLOVE

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Abstract:

The aim of present study was to investigate the phytochemical screening and to compare the antimicrobial activity of oils of Clove bud and Cardamom. Clove bud was successively extracted by steam distillation and isolated with Dichloromethane. The phytochemical analysis revealed the presence of alkaloids, glycoside, steroids, carbohydrates, terpenoids, tannins and phenolic compound. The dichloromethane extract was chromatographed over silica Gel (60-120) and eluted with pure toluene, toluene: Dichloromethane (9:1), toluene: Dichloromethane (8:2), toluene: Dichloromethane (7:3), fraction were monitored by T.L.C. similar fractions were combined and concentrated .eleven fractions were obtained and were labelled as f1, f2, f3 to f11. Cardamom fruit was successively extracted with petroleum ether. The phytochemical analysis revealed the presence of alkaloids, glycoside, steroids, protein, carbohydrates, terpenoids, tannins and phenolic compound. The Petroleum ether extract was chromatographed over silica Gel (60- 120) and eluted with pure Benzene, Benzene: chloroform (9:1), Benzene: chloroform (8:2), Benzene: chloroform (7:3), Benzene: chloroform (6:4), Benzene: chloroform (5:5), Benzene: chloroform (4:6), and with pure chloroform. Fractions were monitored by T.L.C. similar fractions were combined and concentrated. Fourteen fractions were obtained were labelled as fcd1, fcd2 to fcd14. Antimicrobial activity was performed by Disc diffusion method on the staphylococcus aureus (+ve), Escherichia coli (–ve), Pseudomonas aerugenosa (-ve) bacteria and was found that cardamom and clove extract both were similar active for Pseudomonas aerugenosa (-ve) but cardamom was more active for E. coli than clove extracts.

SYNTHESIS, PHARMACOLOGICAL EVALUATION AND MOLECULAR DOCKING STUDIES OF 1-ACETYL 5-SUBSTITUTED PHAENYL 3-AMINO PHENYL 2-PYRAZOLINES

Dahiphale Vijay Bagirao, Assistant Professor, DJPS College of Pharmacy

Abstract:

The five-membered heteorocyclic group of pyrazoles/pyrazolines play s important role in drug discovery. pyrazoles/pyrazolines present a wide range of biological activities. The synthesis of the pyrazoles/pyrazolines derivatives was accomplished via the condensation of the appropriate substituted aldehydes and aceto phenones, suitable chalcones and hydrazine hydrate in absolute ethanol in the presence of drops of glacial aceticacid. The compounds are obtained in good yields 68.99% and that it structure was confirmed using IR, Hl-NMR, C13-NMR and elemental analysis. Molecular docking studies for pyrazoline derivatives were studied and reported. Molecular docking studies reduce the time and costs involved in drug discovery process and have no adverse effect on the environment. Pyrazoles have been the recent target of numerous methodologies, mostly due to their prevalence as scaffolds in synthesis of bioactive compounds and reactions in different media. In this review, an attempt is made to provide an up to date developments in the synthetic strategies, biological activities associated with these classes of compounds. The chemical and biological applications shown by the pyrazolin analogues in recent years were discussed

STUDY TO INVESTIGATE PHYTOCHEMICAL AND ANTIMICROBIAL ACTIVITY OF ECLIPTA ALBA (LEAF) SOLANUM ZANTHOCARBUM (SEED METHONALIC EXTRACT COMBINATION)

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Abstract:

Objective: This study aims to phytochemical and antimicrobial study of Eclipta Alba. Materials and Methods: Antimicrobial activity of flavonoids (free and bound) of Eclipta Alba L. was determined by disc diffusion assay against four bacteria (Escherichia coli, Pseudomonas aeruginosa, Proteus mirabilis, and Staphylococcus aureus) and four fungi (Aspergillus flavus, Aspergillus niger, Trichophyton mentagrophytes, and Candida albicans). Minimum inhibitory concentration (MIC) of the extract was evaluated through micro broth dilution method, while minimum bactericidal/fungicidal concentration was determined by subculturing the relevant samples. Total activity (TA) of extracts against each sensitive pathogen was also evaluated. Results: Out of fungi; A. flavus, A. niger, and T. mentagrophytes were found to be resistant, against which none of the tested extracts showed activity. Bound flavonoids extract of root showed best activity against C. albicans (inhibition zone (IZ) 27.66, MIC 0.039, minimum fungicidal concentration (MFC) 0.039). TA of free flavonoid extract of root was found to be the same for P. mirabilis and S. aureus (192.30 ml/g). Two flavonoids quercetin and kaempferol were identified in the bound flavonoids of stem extract which showed activity against all the microorganisms. Conclusion: Results of the present investigation indicate that Eclipta Alba has good antimicrobial activity with low range of MIC, hence can be exploited for future plant based antimicrobial drugs.

DEVELOPMENT AND STANDARDIZATION OF POLY HERBAL OIL AND CLINICAL SIGNIFICANCE OF ITS HAIR GROWTH STIMULATION

Hange Dipak Dagdu, Assistant Professor, DJPS College of Pharmacy

Abstract:

Oil formulation is a one of the topical formulations and it gives better absorption on the skin and less adverse effect comparable to other formulation. When the plant formulated a soil it gives better absorption through skin and gives maximum therapeutic. There view of Murray akoenigii, Phyllanthus emblica, Azadira chtaindica, and Mentha spicata plants shows good medicinal value. All the plants provide hair growth activity. Among topical formulation, the oil formulation is more suitable for topical application and produce cooling effects. Aim & objectives: To develop and standardization of Poly Herbal Oil and clinical evaluation of its hair growth stimulation. Materials and methods: The Phytochemical investigation of a plant involves authentication and extraction of plant material; qualitative and quantitative evaluations; separation and parallel to this may be the assessment of pharmacological activity. Results and discussion: Preliminary phytochemical screening was carried out for all the plants and its extracts to determine the presence of active principle in plants. Fluorescence analysis was carried out to detect the presence of chromophore present in the powder and extracts. Qualitative estimation of total flavonoid contend and total Phenolic content were determined by spectro photometrically all the extract showed significant amount of flavonoid and phenolic compounds. Conclusion: It is concluded that the prepared poly herbal oil containing Murrayakoenigi.i, Phyllathusemblica, Azadirachtaindica and Menthaspicata proved hair growth activity.

SYNTHESIS CHARACTERIZATION AND ANTI MICROBIAL SCREENING OF 1,3,4-THIADAZOLE PHENOL DERIVATIVES

Alure Bhalchandra Shivajirao ,Assistant Professor, DJPS College of Pharmacy

Abstract:

Objectives: Pathogenic microbes are causal agents for various types of severe and even lethal infectious diseases. Despite of development in medication, bacterial and fungal infections still persist to be a vital problem in health care. Bacteria and several fungal species have shown resistance to antibiotics used in treatment to current medications. Therefore, it is a considerable field of interest in the design and development of novel compounds with antimicrobial activity. Methods: The compounds bearing a heterocyclic ring play an imperative role among other organic compounds with pharmacological activity used as drugs in human for control and cure of various infections. Thiadiazoles containing nitrogen–sulfur atom as part of their cyclic structure which shown wide-ranging application as structural units of biologically active molecules and are very useful intermediates in Medicinal Chemistry. Results: The effectiveness of the thiadiazole nucleus was established by the drugs currently used for the treatment of various infections. 1,3,4-Thiadiazoles and some of their derivatives are widely studied because of their broad spectrum of pharmacological activities. Conclusion: In the present work, a series of 1,3,4- Thiadiazole derivatives were synthesized by cyclization of a group of various benzaldehyde with thiosemicarbazide in the presence of various reagent like FeCl3 , HCHO by losing a molecule of water. These derivatives were found to possess prominent antimicrobial activity.