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Editorial

Dear Readers,

With this issue we present to you the first issue of 2020. It is a pleasure for the editorial team to note a paradigm shift in the articles being submitted to the journal for publication. The request for publication in the journal has started pouring in from the articles within the university as well as outside the university. The readership has also seen a change with more number of views and downloads coming from outside the university rather than from within. We would like to applaud all our contributors for their unconditional support and we hereby solemnly promise to take this dream venture of our prestigious University to scale newer avenues in the coming years with the focus more on original than the copy.

What a time it is proving to be living in. Every day begins with a new hope and for most of the mankind it ends in despair. We are all together in this state of affairs in which we have a limited experience and for which we are underprepared and face the biggest challenge in the modern era. The COVID-19 pandemic has taken the world by storm and all the superheroes who were busy saving the earth during the turbulent times have disappeared all of a sudden. Mankind is seeing new superheroes in the form of Healthcare workers, Police personnel and all the workers involved in keeping our surroundings clean. Every one of them deserves an applause and standing ovation from all of us. In fact all of us are warriors in our own right and can really help each other in defeating this demon who is threatening to take over our beautiful world. The world will not be same once this pandemic is over. Social distancing will be the new norm and personnel hygiene will no longer take a backseat. The technology has ensured the smooth functioning of most of our daily jobs. Rest assured we will be victorious and the world will be a happy place once again.

Coming back to the journal, I once again seek your support and look forward to welcoming your submissions for next issue and your valuable suggestions are eagerly awaited.

Stay Safe, Stay Happy, Stay Healthy

Happy Reading

Dr Vijay Wadhwan

Editor-in-Chief

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Case Report

Acute Methotrexate Toxicity In A Patient And Its Management - A Case Report

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Abstract

Introduction: Methotrexate is a commonly used drug in the treatment of widespread psoriasis. Methotrexate (MTX) is an antimetabolite which interferes with DNA synthesis by inhibiting the enzyme Dihydrofolate reductase. Other than the commonly known side effects like hepatotoxicity, methotrexate may induce rare adverse event like cutaneous ulceration. Review of the literature demonstrates that in patients with chronic plaque psoriasis, it is induced by triggers such as accidental overdose or introduction of an interacting agent. Cutaneous ulceration typically precedes other markers of toxicity. Active treatment with folinic acid (calcium leucovorin) may be required. **Case report:** A 18 years old male presented with multiple, painful ulcerations and erosions over oral and genital mucosa with swelling and ulceration over both lips. Also he had complaints of dysphagia and multiple, red, transient, itchy lesions present over chest, arms, back, abdomen and lower limb. On taking history, it was seen that the patient had accidentally consumed tab. methotrexate 10 mg BD (instead of tab. methyl prednisolone which was prescribed) for a period of 3 days. Patient was investigated and had marrow suppression with a total leucocyte count of 1500 cells/mm3. He was diagnosed as having Acute Methotrexate toxicity and hence started on Inj.Leucovorin every 6 hourly started empirically. Patient responded well with reduction in pain and healing of ulcers and was discharged with improved leucocyte count of 4700 / mm3 at the end of 1 week. **Discussion:** This case depicts the importance of recognizing clinical signs of methotrexate toxicity and initiating therapy as soon as possible. Methotrexate is an option of great therapeutic value and it should be prescribed with great care and under strict supervision..

Key words: Methotrexate, Ulceration, Leucovorin

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Introduction:

Methotrexate is a commonly used drug in the treatment of widespread psoriasis. Methotrexate (MTX) is an antimetabolite which interferes with DNA synthesis by inhibiting the enzyme Dihydrofolate reductase. Other than the commonly known side effects like hepatotoxicity, methotrexate may induce rare adverse event like cutaneous ulceration which typically preceeds markers of toxicity [1]. Review of the literature demonstrates that in patients with chronic plaque psoriasis, it is induced by triggers such as accidental overdose or introduction of an interacting agent. Higher dose can often have toxic effect on different system causing lowering blood counts, deranging liver function by increasing enzyme level and skin and mucosal necrosis. The mechanism of acute toxicity due to methotreaxate is by inhibiting DNA synthesis in rapidly proliferating cells i.e., gastrointestinal (GI) tract, haematopoietic cells and cells on psoriatic lesion. Hence acute methotrexate toxicity causes decrease blood counts, nausea, vomiting, black stool, skin and mucosal erosion and ulceration. Cutaneous ulceration typically precedes other markers of toxicity. Acute MTX toxicity presents as pancytopenia, gastrointestinal (GI) mucositis, hepatotoxicity, pulmonary toxicity, and acute renal failure. [2] There are no published data regarding the acute cumulative dose causing acute toxicity, duration to achieve acute cumulative toxic dose and various reasons for wrong dosing of methotrexate in Indian patients.[3] Active treatment with folinic acid (calcium leucovorin) may be required. [4]

Case report:

A 18 years old male presented with multiple, painful ulcerations and erosions over oral and genital mucosa with swelling and ulceraion over both lips with dysphagia since 2 days. Also he had complaints of dysphagia and multiple, red, transient, itchy lesions present over chest, arms, back, abdomen and lower limb since 1 day. Onn taking history, it was seen that the patient had accidentally consumed tab. methotrexate 10 mg BD (instead of tab. methyl

Investigations	15/4/19 (baseline)	16/4/19	17/4/19	18/4/19	22/4/19
Hb	11.7	11.5	11.5	12.2	12.1
TLC	1500	1800	2300	3200	4700
DLC- N L M E	18 46 00 36	31 47 00 22	45 20 00 35	51 24 00 25	68 29 02 01
Platelet counts	2,20,000	1,80,000	2,00,000		2,10,000
RBS	87.0				
Urea	22				
Creatinine	0.7				
sodium	138				
Potassium	3.8				
Calcium	8.6				
SGPT	89.0			45.0	
Urine R and M		WNL			
Urine C and S				No bacterial pathogens seen	

prednisolone which was prescribed) for a period of 3 days. There was no complaint of bleeding PR, blood in urine, epistaxis, fever, eye complaints. Pt was admitted previously under medicine department 20 days back (on 25/3/19) with complaints of fever with cold since 10 days and disoreintation to time, place and person with slurring of speech since 2 days. He was diagnosed as a case of post-ischemic cerebral atrophy (MRI proven) with encephalitis for which he was prescribed methylprednisolone instead of which he ingested methotrexate 10mg for 3 days(total dose= 60mg). General condition of the patient was fair with normal vitals and normal systemic examination. On cutaneous examination it was seen that Multiple erythemtous erosions, of variable sizes ranging from 1mm in the mucosa to maximum of 4mm were present over lower lip. These erosions cover B/L buccal mucosa and both upper and lower lips. Also, similar lesions were seen over glans penis with difficulty in retraction of prepuce. Multiple wheals and plaques seen over body. Patient was investigated and had marrow suppression with a total leucocyte count of 1500 cells/mm3 with eosinophelia (E = 36) and raised SGPT of 89.0. He was diagnosed as having Acute Methotrexate toxicity and hence started empirically on Inj.Leucovorin (folinic acid) 15mg every 6 hourly. Along with this, symptomatic treatment was given incuding intravenous fluids, oral care, antibiotics and antihistaminics. Patient responded well with reduction in pain and healing of ulcers and was discharged with improved leucocyte count of 4700 / mm3 at the end of 1 week and normal SGPT of 45.0 after 3 days of commencement of treatment.

Discussion:

Methotrexate (4-amino-N10methyl pteroylglutamic acid) is a potent competitive antagonist (inhibitor) of the enzyme dihydrofolate reductase. It is structurally similar to folic acid. Methotrexate (MTX) inhibits mitosis of the cells by antagonizing folic acid required for deoxyribonucleic acid (DNA) synthesis of cells. Once in the cell, MTX inhibits dihydrofolate (DHF) reductase, an enzyme responsible for the conversion of DHF to tetrahydrofolate (THF). Consequently, there is a reduction in thymidylate and purine biosynthesis. DNA synthesis eventually halts and cells can no longer divide. Polyglutamination of MTX prolongs its intracellular presence. Hence, cells with the capability of effective polyglutamination such as leukemic myeloblasts, synovial macrophages, lymphoblasts, and epithelia are more susceptible to the action of MTX. MTX can be administered orally, intravenously, intramuscularly, or subcutaneously. [5]

Approximately 50% of MTX is bound to plasma proteins, and the active portion of the drug is the free fraction (unbound) in the plasma. Thus, any drug that may increase the unbound MTX portion (such as sulfonamides and salicylates) may increase the beneficial tissue effects, as well as increasing the potential for toxicity. The common reported precipitating factors for methotrexate toxicity are an alteration in methotrexate dosage and the concomitant use of non-steroidal anti-inflammatory drugs (NSAIDS).[6] Psoriasis patients commonly use NSAIDS for joint pain and co-administration of NSAIDS with methotrexate increases methotrexate level in blood by inhibition of renal tubular secretion of methotrexate. Other factors contributing to methotrexate toxicity include renal insufficiency, (the drug Methotrexate is excreted by renal system), infection, pustular psoriasis and age >55 years. Drugs can increase the risk of methotrexate toxicity either by decreasing the renal elimination of methotrexate by competing with drugs like aminoglycosides, cyclosporine, non-steroidal anti-inflammatory agents, sulfonamides, probenecid, salicylates, penicillins, colchicines, cisplatin and other renotoxic drugs, or by displacing methotrexate from protein binding sites in the plasma by co-administration of drugs like salicylates, probenecid, sulfonamides, barbiturates, phenytoin, retinoids, sulfonylureas, tetracyclines.

Methotrexate toxicity is rare with low dose, correct scheduling of the dose and adherence to the recommended guidelines.[7] Acute methotrexate toxicity manifests itself in several forms including hepatotoxicity, pulmonary toxicity, acute renal failure, stomatitis, ulceration/erosion of the GI and pancytopenia. [8]

Treatment of methotrexate toxicity is usually by folinic acid rescue therapy. Ideally, the dose of folinic acid is usually decided according to level of serum methotrexate and duration of overdosing. However, facility of measuring serum methotrexate level is not available in resource poor settings. In present case report the patient had haematological toxicity at the time of presentation and serial methotrexate level could not be measured. Hence he was treated with intravenous folinic acid (leucovorin) 15 mg 6 hourly for 3 days. Also, elimination from the body helps in improving the condition of the patient. This includes adequate hydration (atleast 2 L/m2/day output with 3 L/m2/day input), alkalinization of urine (pH>7), glucarpidase enzyme (if mtx level >10micromoles/litre and raised KFT). [9] Organ specific care should be

taken which incudes oral care if ulcers are present in oral mucosa and colony stimulating factors for myelosupression. [10]

Figure. Sites involved before and after treatment

This case depicts the importance of recognizing clinical signs of methotrexate toxicity and initiating therapy as soon as possible. Methotrexate is an option of great therapeutic value and it should be prescribed with great care and under strict supervision.

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Conflict of interest: Nil
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Review Article

Green Solvents And Their Importance In Medicinal Chemistry: An Overview

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Abstract

Review concerning with green solvents is aimed on minimizing environmental damages due to the exhaustive use of harmful & toxic solvents in medicinal chemistry for synthesizing various drugs. In last one decade, researches have been tried develop solvent-free processes as well as recycling methods but these methods have serious limitations. Therefore, the authors review different eco-friendly solvents as alternatives of toxic solvents. This work focused on the ecofriendly solvents like water, fluorous solvents, ionic liquids, organic carbonates, supercritical carbon dioxide, as well as biosolvents instead of conventional organic solvents...

Key words: Green solvents, Green chemistry, Ionic liquids, Water, Liquid polymers, Supercritical carbon dioxide, Fluorous solvents, Biosolvents, Catalyst

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Introduction

"Sustainable Technology" or "Green Chemistry", as it is known today, can be shortly defined as a chemical working process, utilizing raw materials, eliminating waste and avoiding the use of toxic and hazardous reagents and solvents. Furthermore, high product selectivity at an economical reaction rate should be achieved, thereby minimizing the amount of solvents, reagents and promoters [1,2]. Twelve principles of "Green Chemistry" were laid down by Paul Anastas and John Warner, describing its main goals and explaining its definition in practice [3,4]. In conclusion, this novel approach is meant to contribute reduction of energy requirement and also lead to financial savings eventually [5].

Green chemistry is often an elegant procedure used in synthesis of pharmaceuticals. This includes development of new methods of synthesis of pharmaceuticals to synthesize entity with less consumption of resources and less production of waste and development of alternative and more sustainable starting materials.

Concerns have arisen in the field of chemical processing since enormous amounts of poisonous and inflammable solvents are used every day. Each year, more than twenty million tons of waste residues from organic solvents are emitted to the atmosphere, causing unnecessary waste of solvents and polluting the environment [1]. Despite the fact that organic solvents, such as DMSO, DMF, acetone as well as aromatic ones e.g. benzene, toluene and chlorinated solvents (CHCl) contribute to environmental pollution, they are still used in large amounts [6]. Prolonged exposure to solvents has a harmful impact on all systems present in living organisms, damaging mainly respiratory and nervous systems [6,3]. Moreover, the use of hazardous solvents is deleterious to organs, e.g. carbon tetrachloride and chloroform are hepatotoxic [2,4]. The kidney failure occurs while glycol ethers and chlorinated solvents are used [2]. Furthermore, working with some solvents like halogenated hydrocarbons, petroleum distillates and diethylene glycol may lead to renal tubular necrosis, even after a short period of time [5]. According to the data published by WHO, about 1/4 of the current diseases occur as a result of long term exposure to environmental pollutants. Due to synthetic chemicals discharge or an accumulation of natural chemicals, pollutants reach toxic levels. High levels of pollutants lower the number of wildlife, impair the ecosystem and possess a threat to a human health [2]. Reducing the use of solvents or replacing them with less toxic

ones is one of the most relevant aims of green chemistry [14,15].

Green solvents it is commonly acknowledged that the process efficiency is highly dependent on the solvent type. Owing to their special properties, green solvents improve chemical processes, lower the use of solvents and decrease the processing steps [2,7]. Water [8,9], supercritical fluids [10,11], ionic liquids [12], non-toxic liquid polymers [16,17,18,19] and their diverse combinations are part of the class of green solvents. They are characterized by low toxicity, convenient accessibility and the possibility of reuse as well as great efficiency. An ideal green solvent would also mediate reactions, separations or catalyst recycling [22, 23]. An idea of green chemistry is aiming for replacement of commonly used solvent with 'green' ones, resulting in a reduced environmental impact. However, it leads to discussions about supremacy of one green solvent over another [13, 20]. Ionic liquids have been especially negated for their complicated synthesis and toxicity [20], although so has water [13,21]. A choice of an optimal solvent for a reaction is crucial and it significantly affects the outcome.

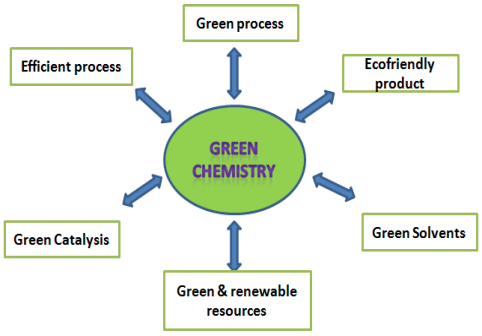

Fig.1. Advantages of Green Chemistry

(i) Ionic Liquids

Ionic liquids are mixtures of anions and cations, molten salts, with melting point around 100º C, which can be used as alternative solvents in organic synthesis [24,25,26]. Although the ionic liquids do not comply full with green chemistry principles, they are very promising as alternatives to organic solvent In the scientific literature there are a large number of research papers for the use of ionic liquids in synthetic routes and various applications [27,28, 29].

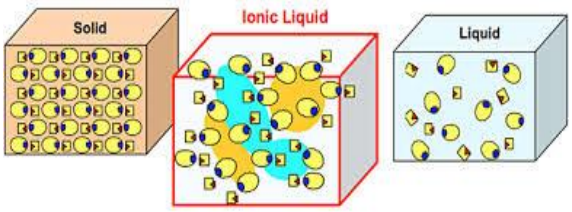

Fig.2. Ionic liquid

(ii) Water

Although water is considered a problem for organic synthesis and the purification processes and drying in final products is very cumbersome, in recent years water is considered a good solvent for organic reactions[30]. A good example is the synthetic routes of the Diels-Alder reactions in which the hydrophobic properties of some reagents makes water an ideal solvent. Water as a solvent accelerates some reactions because some reagent are not soluble and provides selectivity. The low solubility of oxygen is also an advantage for some reactions where metal catalysts are used. In the last years water is used in many methods for organic reactions and the scientific literature has a large number of papers [31,32].

(iii) Supercritical carbon dioxide and supercritical water

A supercritical liquid is at a temperature and pressure above its critical point, where distinct liquid and gas phases do not exist [33]. The supercritical liquid can effuse through solids like a gas, and dissolve materials like a liquid. In addition, close to the critical point, small changes in pressure or temperature result in large changes in density, allowing many properties of a supercritical fluid to be "fine-tuned". Supercritical liquids are suitable as a substitute for organic solvents in a range of industrial and laboratory processes. Carbon dioxide and water are the most commonly used supercritical fluids. Supercritical CO_2 and water are considered "green" solvents in many industrial processes, providing high yields in many reactions, and there are many examples of their use in the scientific literature. Organic Synthesis with Carbonic esters Carbonic esters, such as DMC, dimethyl carbonate ($CH_3OCOOCH_3$) are considered a new class of "green" solvents in many organic reaction processes. They can replace methy chlorides and di-methyl sulphate esters which are toxic and hazardous [34].

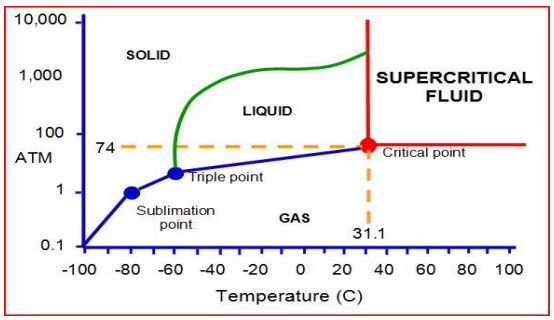

Fig.3. Phases of fluid

(iv) Liquid polymers

Liquid polymers comprise a group of non-volatile solvents that gained the attention, because of a possibility of using them in conjunction with $scCO_2$ as media, for homogeneous catalysis with catalyst recovery [35-36]. Their task as a solvent in reactions and a catalyst is alike to that provided by ionic liquids in biphasic catalysis. Nevertheless, liquid polymers

are not as polar as ionic liquids, they should be rather considered as a supplement to ionic liquids, not a substitution. PEG (polyethylene glycol) is rightfully called a green chemical, because it is inflammable, non-volatile, non-toxic to humans, animals and aqueous environment. Additionally, the polymer is biodegradable by bacteria found in sewage and soil [16,19, 37,39]. PPG (polypropylene glycol) is the next non-toxic liquid having similar properties as PEG, however it is slightly less biodegradable [18,37,40]. PDMS (polydimethylsiloxane) and dialkylethercapped PEG showed to be significantly less biodegradable and PTHF (polytetrahydrofuran) in hydrous emulsion a variant is toxic to Daphnia magna [37]. To sum up, all polymers presented above have successfully proved to have the potential to be extensively employed as media, for various reactions and catalysis [38].

(v) Fluorous solvents

The term "fluorous" solvents was first coined by Horváth and Rabai in analogy to "aqueous" to perfluorinated alkanes, dialkyl ethers, and trialkyl amines [39]. Importantly, ethers and amines have no residual basicity and the lone pairs are very low in energy, which is explaining the lack of any intermolecular interactions. These perfluorinated liquids have useful and attractive properties for organic synthesis, such as chemical inertness, high thermal stability, nonflammability, an extreme non-polar character and small intermolecular attraction [40]. Their immiscibility with common organic solvents at room temperature allows the formation of biphasic systems which have been extensively studied in stoichiometric and catalytic transformations. For biphasic catalysis the catalyst must be solubilized in the fluorous phase which is achieved by attaching fluorocarbon moieties such as linear or branched perfluoroalkyl chains, so-called "fluorous ponytails". The reaction can take place either in the fluorous phase or at the interface between the phases, if the solubility of the reactants is low in the fluorous phase. Phase transfer agents may be added to facilitate the reaction. At higher temperature fluorous biphasic systems can become miscible forming a homogenous liquid phase reaction media [41]. Thus, the advantages of both, a single-phase media for the reaction and a biphasic system for separation of the products can be exploited. Fluorous solvents are not yet widely used commercially, probably due to drawbacks like rather high cost, environmental persistence, and biological half-lives, especially of C7- and C8-perfluoroalkyl group containing compounds.

(vi) Biosolvents

Biosolvents have been developed as an alternative to volatile organic compounds (VOC), which are usually harmful to the environment and to human health. The most important chemical classes of biosolvents are esters of naturally occurring acids and fatty acids, bioethanol, terpenic compounds, isosorbide, glycerol, and glycerol derivatives [40,41]. These compounds offer the advantage of being produced from renewable sources such as vegetable, animal or mineral raw materials by chemical and physical processes without the consumption of fossil resources. They are already widely used in cosmetics, cleaning agents, paint, inks, and agricultural chemicals [42]. A bio-based solvent has to meet certain criteria to be considered for application, such as (1) optimal technical specifications (dissolution capability, volatility, flash point), (2) environmental safety, (3) eco-compatible production, (4) and the availability and cost of the renewable raw materials [39].

Bio-based solvents have successfully been employed in multi component reactions with seemingly synergistic effect [43].

(vii) Catalyst

"Green" Catalysis under the Green Chemistry Principles It is not only the "green" solvents that will change the face of synthetic organic reactions, but also the use of "green catalysts" will improve substantially the efficiency of many industrial processes. The use of catalysts is one of the principles of Green Chemistry [18,19]. Catalysis is considered a cornerstone for innovative changes in chemical processes. Catalysts will affect energy use and reaction time, will increase yield, reduce use of solvents, and lower production of by-products and waste. Catalysis with "green" catalysts (which can be recycled) is considered a very important step in the direction of Green Chemistry for many industrial processes [45].

Discussion

From the discussion of the all selected solvent alternatives (Ionic liquid, Water, fluorous solvents, Supercritical carbon dioxide, Liquid polymer, biosolvents and catalyst) in this review, it is obvious that the obtained results are similar and sometimes even better than these, resulting from conventional syntheses in organic solvents. Water, as a cheap, abundantly available, nontoxic and nonflammable solvent represents an ideal reaction medium for many processes, being mostly established in organometallic catalysis, hydro-formylation processes and oxidations. Fluorous solvents and ionic liquids are attractive alternatives for performing reactions, which are not accomplishable in water or supercritical carbon dioxide. Organic carbonates, mostly used for extraction purposes and pharmaceutical and medical applications, feature characteristics like low (eco) toxicity, complete biodegradability as well as inexpensiveness. Supercritical carbon dioxide also exhibits outstanding characteristics for the utilization in Green Chemistry, such as the possibility to separate it from the resulting product by simple pressure release. Reaction rates are very high in scCO2, due to its intermediate properties, between gas and liquid state. Biosolvents, being produced from renewable sources are already widely used in cosmetics, cleaning agents, paint, inks, and agricultural chemicals and became to play an important role as an alternative to conventional

solvents. Taken together, the green approach, where solvent alternatives complement one another, provide the ideal basis for a Pharmaceutical industry and will lead to synthesis of drugs.

Conclusion

Green chemistry is a rapidly developing new approach that provides us a proactive avenue for the sustainable development of future science and technologies. When designed properly, clean chemical technology can be developed in water as a reaction medium. The technology generated from such green chemistry endeavours may often cheaper and profitable in respect of drugs. Green chemistry is designed to be a basis for all reaction in near future. In this context a convenient and rapid synthetic procedures i.e. energy efficient is highly desirable.

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Original Article

Qualitative and Quantitative Estimation of Aceclofenac by Spectrophotometric Method: A Hydrotropic Approach

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Abstract

In Pharmaceutical field, it is required to prepare aqueous solution of variety of insoluble drugs. For this purpose various techniques are employed to enhance the aqueous solubility of poorly water soluble drugs. Here, Solubility of poorly water soluble aceclofenac was determined with saturation aqueous solubility method in mixture of 20 ml (2M) Urea, 30 ml of (5M) Sodium Acetate and 50 ml Distilled water. The mean % recoveries were found to be close to 100, indicating the accuracy of the proposed method. This method would be reliable and accurate for quality control tool for the estimation of drug from their marketed formulation in routine quality control analysis.

Keywords: **Aceclofenac (ACE), ICH Guidelines, Hydrotropic mixtures**.

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Introduction

The hydrotropes are known to self-assemble in solution. The classification of hydrotropes on the basis of molecular structure is difficult, since a wide variety of compounds have been reported to exhibit hydrotropic behaviour. Specific examples may include ethanol, aromatic alcohols like resorcinol, pyrogallol, catechol, a- and b-naphthols and salicylates, alkaloids like caffeine and nicotine, ionic surfactants like diacids, SDS (sodium dodecyl sulphate) and dodecylated oxidibenzene.[1]

Hydrotropes do not have a critical concentration above which self-aggregation 'suddenly' starts to occur (as found for micelle- and vesicle-forming surfactants, which have a critical micell concentration or cmc and a critical vesicle concentration or cvc, respectively). Instead, some hydrotropes aggregate in a step-wise self-aggregation process, gradually increasing aggregation size. However, many hydrotropes do not seem to self-aggregate at all, unless a solubilisate has been added, [1]

Aceclofenac (ACE) is a widely used non-steroidal, anti-inflammatory agent. Chemically, aceclofenac is 2-[(2,6-dichlorophenyl) amino] benzeneacetic acid carboxymethyl ester. Various techniques have been employed to enhance the aqueous solubility of poorly water-soluble drugs. A hydrotrope is a compound that solubilises hydrophobic compounds in aqueous solutions. Typically, hydrotropes consist of a hydrophilic part and a hydrophobic part (like surfactants) but the hydrophobic part is generally too small to cause spontaneous self-aggregation. [2,3]

Experiment

Instrumentation

UV-Visible double beam spectrophotometer, Thermofisher UV-2700 having spectral bandwidth 1.6 nm and of wavelength accuracy ±0.5 nm, with 1cm quartz cells was used. All weighing were done on electronic balance.

Reagents and Chemicals

AR grade Urea and Sodium Acetate were selected as hydrotropic agent for further study to simultaneous estimate the concentration of both the drugs in solid dosage form. Both the agents were finalized after considering the solubility and stability factor of both the drugs as well as the interference due to excipient matrix present in the tablet formulation.

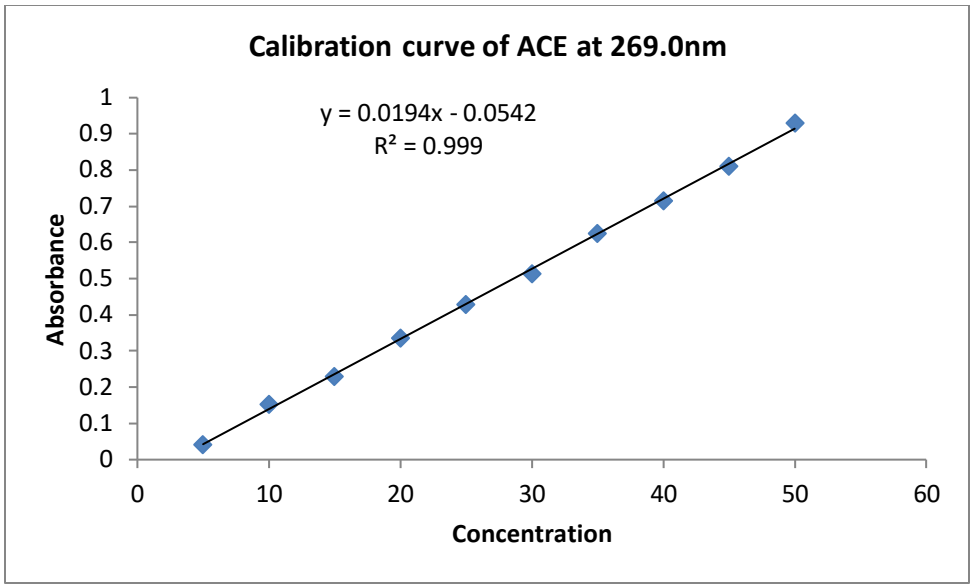

Fig 1: Linearity of ACE at λ_{max} 269 nm

Method

Solubility of ACE was determined by saturation aqueous solubility method in mixture of 20 ml (2M) Urea, 30 ml of (5M) Sodium Acetate and 50 ml Distilled water. An excess amount of drug was added to the 100 ml beakers containing mixture of 20 ml (2M) Urea and 30 ml (5M) Sodium Acetate and 50ml Distilled water. The beakers were sonicate for 20 minutes at 30^0C. The solutions were filtered through whatman filter paper and the resulting filtrates were suitably diluted and analyzed spectrophotometrically against corresponding solvent blank.

Preparation of stock solutions

The standard stock solution of 1000 µg/ml for ACE was prepared by dissolving 100 mg of drug in mixed solution of 20ml (2M) Urea, 30ml (5M) Sodium Acetate and 50 ml of distilled Water to make volume upto 100ml. Then sonicated the solution for making a clear solution. Further working standard solution of 100 µg/ml of ACE was prepared by diluting 10 ml of above prepared solution to 100ml with distilled water.

Preparation of standards solutions for linearity study

Form the standard stock solutions of 100µg/ml of ACE , different dilutions were prepared. these solutions were scanned over the range of 400-200nm and absorbance were measured in the spectrum mode at the respective analytical wavelengths of 269.0 for ACE for all the five replicates. The calibration curves were plotted between the mean value of the observed absorbance and respective concentration. From the calibration curve given in Fig.1, it was found that the drug follows Beer's-Lamberts law within the range of 5-50µg/ml.

Analysis of Tablet Dosage form

Ten tablets of Aclospar were taken and their average weight was determined, they were crushed to fine powder. The required quantity of powder was taken and dissolved in mixture of 20 ml (2M) Urea solution and 30 ml (5M) Sodium acetate solution then adjust the volume upto 100 ml with distilled water to prepare a stock solution contain 1000 µg/ ml of ACE. From the above prepared stock solution further sub stock solution of 100µg/ml of ACE was prepared. From the sub stock solution 1 ml was taken and dissolved up to 10 ml with distilled water to prepare a solution contain 10µg/ml of ACE. Absorbances of the prepared dilutions were taken at 269.0 wavelengths in five replicates and their concentrations were determined. The result was given in the Table 1

Replicate No.	Label claim (mg/Tab)	Conc. Found (mg/Tab)	Percentage found
	ACE	ACE	ACE
Replicate-1	100	99.021	100.18
Replicate-2	100	99.158	100.18
Replicate-3	100	100.023	100.21
Replicate-4	100	99.148	100.07
Replicate-5	100	100.021	100.01

Table 1. Analysis of Aclospar

Recovery studies

Recovery study was carried out as per ICH guidelines[4,5], where to a pre analyzed solution of tablet formulation known concentration of standard solution was added equivalent to 80,100 and 120 of total drug content and the % of recovery was calculated. The result was given in Table 2.

Replicate No.	Amount taken (µg/ml)	Amount added µg/ml		% Recovery
	ACE	%	ACE	ACE
Replicate-1	4	80	3.2	100.11
Replicate-2	4		3.2	100.14
Replicate-3	4		3.2	100.15
Replicate-1	4	100	4	100.20
Replicate-2	4		4	100.14
Replicate-3	4		4	99.94
Replicate-1	4	120	4.8	99.57
Replicate-2	4		4.8	99.75
Replicate-3	4		4.8	100.17

Table 2. Result of Recovery Study

Conclusion

Developed method was statistically significant and validated for quantitative estimation of ACE in tablet dosage form. The accuracy of these methods was confirmed by doing recovery study as per ICH norms. The statistical validation results of recovery study fulfilling the criteria as the % of recovery values were within the range of acceptance limit i.e. 98-102% reveals the accuracy of these methods and no interference of excipients during simultaneous estimation of ACE . Method would reliable and accurate results and hence, utilized as quality control tool for the estimation of drug from their marketed formulation in routine quality control analysis.

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Case Series

Basal Cell Carcinoma- At a not so early stage, A case series.

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Abstract
Introduction: Basal cell carcinomas are the most common Non-Melanoma Skin Cancer (NMSC) in the western world, with an incidence of 2-3 million each year and squamous cell carcinomas are the most frequent skin cancers reported in Indian literature. However, in the background of an agricultural economy and the extent of sun exposure seen in this part of country, we encountered high number of basal cell carcinomas in our OPD in the past 6 months.
Case Report: Ten cases of basal cell carcinoma were diagnosed based on clinical and histopathological findings. Four out of ten were present at the tip of the nose. One patient had a lesion of 3mm in size with classical rolled-out margins.Two patients presented with flat superficial spreading type of BCC > 5 cm in diameter resembling stuccokeratosis. Three out of ten patients had nodular BCC, each more than 5 cm in size, of which one had regional lymph node involvement. Two cases with smaller lesions were treated with electrosurgery and topical 5 FU. Whereas the rest required a wide surgical excision with a margin > 2cm hence needing flaps/ graft to cover the defect.
Discussion: In a country like ours, due to lack of awareness, an early depigmented lesion is frequently considered a taboo and hyperpigmented lesions are ignored, which may otherwise be masking a BCC in its initial stage. Being a locally aggressive tumor, with limited distant spread, it is easy to treat and hence should not be missed at an early stage to reduce the morbidity associated with a wide excision.

Key words: Basal Cell Carcinoma, Non-Melanoma Skin Cancer, Dermatology.

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Introduction
Basal cell carcinomas are the most common NMSC in the western world, with an incidence of 2-3 million each year and squamous cell carcinomas are the most frequent skin cancers reported in Indian literature. BCC progresses slowly and metastases are found in less than 0.5% of the cases; however, a considerable local destruction and mutilation could be observed when treatment is neglected or inadequate.[1]The photoexposed areas are mainly affected in BCC, in about 80% of patients it appears in the head, and in half of them affects the skin of cheeks and the nose. [2]The main etiological factor responsible for BCC is the chronic UV exposure at the expense mostly of UVB rays with length 290-320 mm. [3] This risk is higher in residents of high ambient solar irradiance with markers of UV susceptibility such as fair skin colour, red hair and inability to tan.[4]However, in the background of an agricultural economy and the amount and extent of sun exposure seen in this part of country, we encountered high number of basal cell carcinomas in our OPD in the past 6 months.

Case Report
Ten cases of Basal cell carcinoma were diagnosed based on clinical and histopathological picture. Four out of ten were present on the nose. One patient had a lesion of 3mm in size with classical rolled out margins.2 patients presented with flat superficial spreading type of BCC resembling stuccokeratosis > 5 cm in diameter. Three out of ten patients had nodular BCC's each more than 5 cm in size, one with regional lymph node involvement. Two cases with smaller lesions were treated with electrosurgery and topical 5 FU respectively. Whereas the rest required a wide surgical excision with a margin > 2cm hence needing flaps/ graft to cover the defect.

Results
Prolonged sun exposure was seen in 8 patients whereas intermittent sun exposure was seen in 2

Case	No. Of Lesion	Site of lesion	Lymph node	Size (cm)	Duration (approx. Years)
1	1	Rt. Temporal Region	-	1.2×1.4	4
2	1	Rt. Side of Nose	-	0.9×1.3	6
3	1	Under Lt. Lat. Side of Eye	-	0.9×0.7	3
4	1	B/w Lt. Med. Canthus & Nasal Bridge	-	1.1×1.2	5
5	1	Tip of Nose	-	1.3×1.4	8
6	1	Tip of Nose	-	1.1×1.3	6
7	1	Rt. Temporal Region	-	0.8×0.9	4
8	1	Below Rt. Ear Lobe	-	0.5×1.1	5
9	1	Rt. Temporal Region	+	3.4×3.3	2
10	1	Rt. Periocular Region	+	5.4×4.3	10

Table 1. BCC lesion included in the case series

patients. Characteristics of the lesion: Depiction of the BCC lesion included in the case series are mentioned in table no 1

Histopathology

Histopathologic examination showed 9 as nodular BCC and 1came out to be superficial.

Treatment Given

Different treatment modalities were tried on the basis of size and extent of the tumor. Wide local exicision was done in 2 along with local lymph node resection. Surgical excision with wide margins was done in 6 patients, 1 patient was treated with curettage and desiccation, where topical 5 fluorouracil was used in 1 patient.

Fig 1: Superficial BCC

Fig 2: Nodulo-ulcerative lesion on the tip of the nose

Discussion

The most common Non-Melanoma skin cancer (NMSC) in the western world, with an incidence of 2-3 million each year and squamous cell carcinomas are the most frequent skin cancers reported in Indian literature is slow growing, locally invasive tumor, which rarely metastasizes.[1] It is more common among males probably due to more sun exposure, as it typically occurs in areas of chronic sun exposure, such as head, neck, upper back.

Pathogenesis

Recently, an aberration in the Hedgehog pathway has been found to underlie most BCCs.[5]A recent phase I trial by Van Hoff and colleagues using a small molecule binding to smoothened, thereby inhibiting the activation of downstream Hedgehog target genes, demonstrated a 50% partial response rate in 18 patients with pre-treated and refractory metastatic BCC with an additional 7 patients demonstrating stable disease. [6]

Clinical features

Basal cell carcinoma can present with translucency, ulceration, telangiectasia, and a rolled border. Any friable, nonhealing lesion with history of transient frequent bleeding followed by

complete healing, only to recur is considered to be BCC.

Fig 3: 41/M, presented with an irregularly shaped hyperpigmented nodular lesion with pearly waxy appearance, central depression; 3.4×3.3 cm over right temporal region since 2 years. Wide surgical excision with LN was resection was done

Variants of basal cell carcinoma

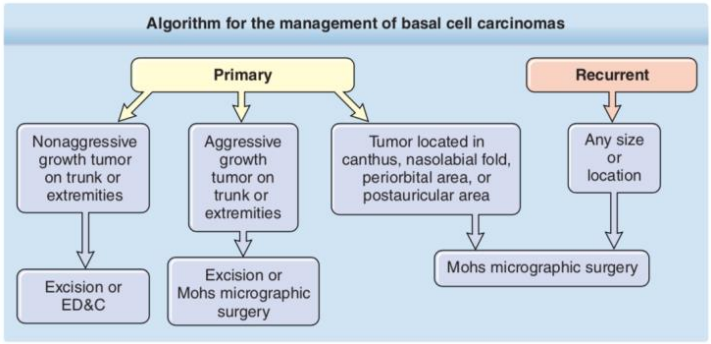
The most common form of BCC is nodular, followed by superficial spreading, then morpheaform. Also, nodular and morpheaform are most commonly found on the head and neck, while superficial spreading is most often found on the trunk region.Different variants along with their histopathological findings are depicted in table no 2.

Nodular	Discrete nests of basaloid cells in either the papillary or reticular dermis
Superficial	Buds of malignant cells extending into the dermis from the basal layer of the epidermis.
Morphea-form	Strands of tumor cells embedded within a dense fibrous stroma
Pigmented	The melanocytes are interspersed between tumor cells and contain numerous melanin granules in their cytoplasm and dendrites.
Fibroepithelioma Of Pinkus (FEP).	Long strands of interwoven basiloma / basalioma cells are embedded in fibrous stroma with abundant collagen

Table 2: Different variants along with their histopathological findings

Therapeutic approach to a case of BCC

It is very important to have an approach to a case of BCC to have a good prognosis as well as to attain cure and avoid metastasis. It has been depicted in a flow chart no 1



Flow chart no.1. Approach to a case of BCC.

Diagnosis

Diagnosis can be made on clinical basis where biopsy has to be done in case of suspicion although excisional biopsy is preferred in general.

Fig 4: Wide surgical excision done between left medial canthus & nasal bridge

Prognosis

Once recognized, prognosis is generally good. Treatment with surgical excision is typically curative. Although these cancers rarely metastasize, basal cell carcinoma can invade nearby structures. Therefore, early recognition is critical to optimize outcomes.

Delay in diagnosis is common and likely due to multiple factors, including (1) patient's delay in presentation for what they might consider trivial irritation; (2) misdiagnosis of BCC for inflammatory, allergic, or infectious skin lesions; (3) rarity of BCC in sun-protected areas; (4) diversity of macroscopic appearance, ranging from erythematous papules and patches to nodules, plaques, and ulcers, (5) in dark-skinned people, BCC may be pigmented and mistaken for other benign lesions and malignant melanoma.[7]

Conclusion

In a country like ours, due to lack of awareness, an early depigmented lesion is frequently considered a taboo and hyperpigmented lesions are ignored, which may otherwise be masking a BCC in its initial stage. Being a locally aggressive tumor, with limited distant spread, it is easy to treat and hence should not be missed at an early stage to reduce the morbidity associated with a wide excision.

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Original Research

Formulation and evaluation of multipurpose herbal cream

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Abstract

Natural remedies area unit a lot of acceptable within the belief that they're safer with fewer facet effects than the artificial ones. Herbal formulations have growing demand within the world market.The present work deals with the development and evaluation of the poly herbal cream containing – Aqueous extract of neem leaves (Azadirachta indica) ,tulsi (Ocimum Sactum) aloe (Aloe vera).Although various topical herbal formulations for acne are available in the market, we propose to make use of – Aqueous extract of neem (Azadirachta indica) tulsi (Ocimum Sactum) aloe (Aloe Vera) The plants have been reported in the literature having good anti-microbial, anti-oxidant and anti-inflammatory activity.The present study was to prepare and evaluate the multipurpose herbal cosmetic cream comprising extracts of natural products such as aloe, tulsi and neem Different types of formulations oil in water (O/W) creams particularly F1 to F4 were developed by incorporating totally different concentrations flavourer of saturated fatty acid and acetyl alcohol. The evaluations of all formulations (F1 to F4) were done on totally different parameters like pH scale, spreadibilty and stability were examined. Formulations F3 and F4 showed sensible spreadibilty, sensible consistency, homogeneity, appearance, pH, spreadibilty, no proof of part separation and easy removal The formulation F3 and F4 shows no redness, , inflammation and irritation during irritancy studies. These formulations are safe to use for skin. These studies suggest that composition of extracts and base of cream of F3 and F4 are more stable and safe, it may produce synergistic action.

Key words: Irritation, Inflammation ,Allergic sign , herbal cream .

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Introduction

Cosmetic products square measure want to defend skin against exogenous and endogenous harmful agents and enhance the wonder and attractiveness of skin[1].

The use of cosmetics not solely aims at developing a good external look, however towards achieving longevity of fine health by reducing skin disorders[2].

The artificial or natural ingredients gift in skin care formulation that supports the health, texture and integrity of skin, moisturizing, maintaining physical property of skin by reduction of sort I albuminoid and photo protection etc.[3]

This property of cosmetic is thanks to presence of ingredients in skin care formulations, as a result of it helps to cut back the assembly of free radicals in skin and manage the skin properties for long time. The cosmetic products are the best choice to reduce skin disorders such as hyper pigmentation skin aging, skin wrinkling and rough skin texture etc[4]. The demand of herbal cosmetic is rapidly expanding. in cosmetic preparation ought to have styles of properties like inhibitor, anti-inflammatory, antiseptic, emollient, antiseborrhatic, antikerolytic activity, antibacterial.

Herbal product claim possess less aspect effects unre markably seenwith product containing artificial agents. The research shows upward trend within the flavourer.[5]

The Aloe vera plant has been known and used for centuries for its health, beauty, medicinal and skin care properties. Aloe vera is a natural product that is now a day frequently used in the field of cosmetology. It can be applied topically as an emollient for burns, sunburn and mild abrasion and for inflammatory skin disorders. It has antibacterial, antifungal, antiviral, antioxidant, and antiinflammatory effects. Aloe vera is used externally for its wound healing properties and is supported by clinical investigation[6,7,8].

The Neem tree (Azadirachta indica) is a tropical evergreen tree native to India. Neem is the most versatile, multifarious tree with immense potential possessing maximum useful non-wood products[9,10]. though in the study area Neem remains unutilized. In India, neem is known as “the village pharmacy” because of its healing versatility, and it has been used in Ayurvedic medicine for more than 4,000 years due to its medicinal properties. The tree is found in no less than 78 countries worldwide [11.] There are over 16.6 millions neem trees in India[12].

Tulsi is an aromatic shrub in the basil family Lamiaceae (tribe ocimeae) that is thought to have originated in north central India and now grows native throughout the eastern world tropics.[13] Within Ayurveda, tulsi is known as "The Incomparable One," "Mother Medicine of Nature" and "The Queen of Herbs," and is revered as an "elixir of life" that is without equal for both its medicinal and spiritual properties.[14] Within India, tulsi has been adopted into spiritual rituals and lifestyle practices that provide a vast array of health benefits that are just beginning to be confirmed by modern science. This emerging science on tulsi, which reinforces ancient Ayurvedic wisdom, suggests that tulsi is a tonic for the body, mind and spirit that offers solutions to many modern day health problems. Tulsi is also credited with giving luster to the complexion, sweetness to the voice and fostering beauty, intelligence, stamina and a calm emotional disposition.tulsi is recommended as a treatment for a range of conditions including anxiety, cough, asthma, diarrhea, fever, dysentery, arthritis, eye diseases, otalgia,and malaria.

Material And Method

Preparation of Extracts

All the Herbals were weighed accurately & aqueous extraction had been done (10 times of the weight of the drugi.e. 5g in 50ml of water on water bath at 80-100^{0}c As the solution concentrated up to20 ml, filtration was done .Residue had been taken & volume was making up to 40 ml, again boiled. After remaining 20 ml was filtered and collected in the form of powder and the same procedure was followed again.

Cream formulation

Oil in water (O/W) emulsion- based cream(semisolid formulation) was formulated. The emulsifier (stearic acid) and other oil soluble components (Cetyl alcohol, almond oil) were dissolved in the oil phase (Part A) and heated to 75° C. The preservatives and other water soluble components (Propyl paraban, Triethanolamine, extract of aloe, neem and turmeric were dissolved in the aqueous phase (Part B) and heated to 75° C. After heating, the aqueous phase was added in portions to the oil phase with continuous stirring until cooling of emulsifier took place.

EVALUATION OF CREAM

- **pH of the Cream:**

The pH meter was calibrated using standard buffer solution. About 0.5 g of the cream was weighedand dissolved in 50.0 ml of distilled water and its pH was measured.

- **Dye test:**

The scarlet red dye is mixed with the cream. Place a drop of the cream on a microscopic slide covers it with a cover slip and examines it under a microscope. If the disperse occurs in w/o type cream i.e. the disperse globules appear color less in the red ground. Globules appear red the ground colorless. The cream is o/w type i.e reverse condition.

- **Homogeneity:**

The formulations were tested for the homogeneity. by visual appearance and by touch.

- **Appearance:**

The appearance of the cream was judged by its color, pearlscence, roughness and graded.

- **After feel:**

Emolliency, slipperiness and amount of residue left after the application of fixed amount of cream was checked

- **Irritancy test:**

Mark an area (1sq.cm) on the left hand dorsal surface. The cream was applied to the specified area and time was noted. Irritancy, erythema, edema, was checked if any for regular intervals up to 24 hrs and reported.

- **Type of smear:**

After application of cream, the type of film or smear formed on the skin were checked.

- **Removal:**

The ease of removal of the cream applied was examined by washing the applied part with tap water.

Conclusion

Natural remedies are more acceptable in the beliefhat they are safer with fewer side effects than thesynthetic ones. So, a Polyherbal cream which isnon- toxic, safe, effective and improves patient compliance by the utilization of herbal extracts would be highly acceptable.

From the above study we can conclude that on combining the extracts of Aloe, tulsi and Neem in different ratios to get multipurpose effect such as whitening, antiwrinkle, antiaging and sunscreen effect on skin. As we know that it is not possible to increase the extent of efficiency of medicinal and cosmetic property of single plant extract, but by combining thedifferent plant extracts it can be possible to increase the efficacy of extracts. In this regard, we mixed the extracts of Aloe , tulsi and Neem to improve as well synergize the cosmetic properties of prepared products compare to individual extracts. Further research will carry out to check scientifically the synergistic action of selected ormulation. Thesestudies suggest that composition of extracts and base of cream of F3 and F4 are more stable and safe; it may produce synergistic action.

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Case Report

Mycetoma- A Diagnostic Challenge

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Abstract

Introduction: Mycetoma is a localized chronic suppurative and deforming granulomatous infection seen in the tropical and subtropical areas characterized by a triad of localized swelling underlying sinus tracts and production of grains or granules.Mycetoma is caused by various species of Eumycetoma and Actinomycetoma which occur as saprophytes in soil or on the plants. **Case Report:** A 34 year old male presented with swelling over the left knee joint for the past 2 years associated with pain and discharge of black coloured grains. O/E ,We could appreciate a limping gait of the patient.A swelling was present over the anterior and lateral aspect of the left knee and multiple erythematous plaques with scaling and crusting were present on the swelling.Patient was investigated and the biopsy showed features suggestive of Mycetoma.Patient was given a therapeutic trial of Itaconazole,Akt-4 kit,Penicillin and linezolid after which the response was good with decrease in pain and swelling.**Discussion**: This case shows us the difficulties faced during diagnosis of mycetoma and the importance of early diagnosis inorder to prevent complications.

Keywords: Mycetoma.,Suppurative, Granulomatous

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Introduction

Mycetoma is a localized chronic, suppurative, and deforming granulomatous infection seen in tropical and subtropical areas. It is a disorder of subcutaneous tissue, skin and bones, mainly of feet, characterized by a triad of localized swelling, underlying sinus tracts, and production of grains or granules. Mycetomas are caused by various species of fungi and bacteria, which occur as saprophytes in soil or on the plants.[1] [2]The disease usually begins as a small subcutaneous swelling of foot which enlarges, burrowing in the deeper tissues and tracking to the surface as multiple sinuses, discharging fluid containing granules. [3]These granules or grains are microcolonies of causative agents and their demonstration is of diagnostic value. Since the treatment of these two etiologies is entirely different, a definite diagnosis after histopathological and microbiological examination is mandatory, though difficult.[1][2]

Case Report

A 34 year old male presented with swelling over the left knee joint for the past 2 years.The patient was apparently well 2 years back when he developed swelling over the left knee joint.The swelling was small in size over the anterior aspect of the knee initially. For this the patient had undergone incision and drainage under aseptic conditions. This gave him relief for 9-12 months. The swelling developed again within a few months and gradually increased in size. The swelling was associated with pain which was insidious in onset, moderate to severe in intensity, pin pricking in character, increased on walking and moving, non radiating and non referring There was associated discharge of blood and dark red fluid and black coloured grains. He worked in a company and did not have a habit of walking barefoot. He had no other relevant past, family history or personal history. O/E We could appreciate a limping gait of the patient. A swelling was present over the anterior aspect and lateral of the left knee. Multiple erythematous plaques with scaling and crusting were present on the swelling. Sinuses could be appreciated over the swelling.There was increased temperature of the joint and decreased range of motion of the left knee. The palms, soles, oral cavity, genitals and scalp were normal on examination. In his investigations ESR and CRP was increased. A mantoux test was done which came out to be 14mm.Gamma interferon aslo came out to be positive. FNAC was done from the lesion that showed chronic inflammation. X-RAY(AP and Lateral) and MRI was also done for the knee joint. This showed joint effusion and dot in circle sign respectively .An excisional biopsy was sent from the

lesion for histopathological examination and bacterial culture.

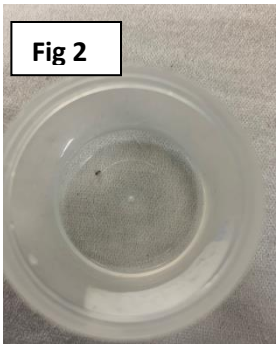

Fig 1 & Fig 2 show left knee joint this figure show a single grain showing swelling and multiple collected from the lesion of the erythematous plaques with crusting.

The biopsy report showed features suggestive of Mycetoma .Apart from this, grains and pus was sent from the lesion for bacterial culture-sensitivity and fungal culture .The result did not show any positive findings. A chest X-ray was done which was normal. The patient was started on Penicillin,

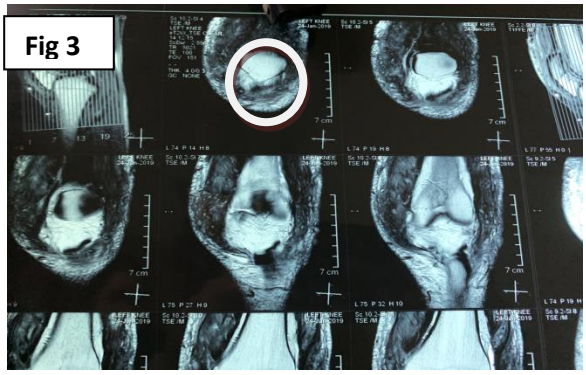

Fig 3 Dot In Circle Sign In MRI suggestive Of Mycetoma

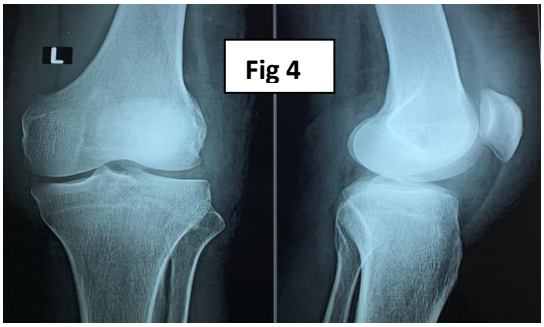

Fig 4 shows AP & Lateral view of the Knee Joint which showed mild joint effusion

Linezolid AKT-4 kit and Itraconazole empirically. After this there was a marked improvement in the swelling pain and the lesions subsided.

Discussion

Mycetoma was described in 1842 for the first time at Madurai district of Tamil Nadu in India and henceforth was named Madura Foot.[4]The disease has no defined geographic boundaries and occurs throughout life, with a peak incidence in the middle decades. Males have a threefold higher incidence than females.[5]It is defined by triad of tumefaction of affected tissue, formation of multiple draining sinuses and presence of oozing granules. Broadly two categories are recognised namely, eumycetoma caused by fungi and actinomycetoma/ actinomycoticmycetoma caused by higher bacteria of the class Actinomycetes. Actinomycoticmycetoma is caused by aerobic species of actinomycetes belonging to genera *Nocardia*, *Streptomyces* and *Actinomadura with Nocardiabrasiliensis*, *Actinomaduramadurae*, *Actinomadurapelletieri*, and *Streptomyces somaliensis* being most common. Eumycoticmycetoma is associated with a variety of fungi, the most common being *Madurellamycetomatis*.[6][7]

It usually affects the foot, hand and legs with tissues becoming necrosed and swollen after infection.[2]Many dermatological conditions, such as botryomycosis, sporotrichosis and plantar or acral psoriasis, can mimic mycetoma.[8]Diagnosis requires a high degree of suspicion in the absence of such clinical signs. Definitive diagnosis should be made on histopathological examination.[9]Without treatment disease may progress to deformities and loss of function which may require amputation at later stage.[10]

Conclusion:

Mycetoma is a rare disease in our country. The case was reported due to the chronic nature of the disease and the misdiagnosis that can happen.This case report depicts the difficulties faced in diagnosing mycetoma and the success of the therapeutic trial of a combination of antibacterial, antitubercular and antifungal drugs that treated the patient.

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Review Article

Social Media: The Most Powerful Tool For Political Mobilization

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Abstract

Oft-quoted as the fourth estate, Media has been playing an important role in influencing political discourse across the globe. However, with the advent of Social Media entire gamut of political discourse and mobilization has undergone a sea-change. Emerged as a vital tool of communication, Social Media has created new ways of mobilizing public opinion. It encourages participation in political and civic activities – ranging from joining online petition and social groups, posting messages on twitter, expressing support through blogs and uploading videos on YouTube. The most important feature of social media is that it provides political parties a unique platform to connect directly with people across the country at a reduced cost but with wider reach in comparison to traditional media platforms. Another distinct feature of social media is its two way communication, which plays a crucial role in mobilizing the public opinion.

Keywords: Social Media, Political Mobilisation, Communication

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Introduction

Political mobilization according to famous sociologist Charles Tilly is “the process through which a group goes from being a passive collection of individuals to an active participant in public life” and since very beginning Media has been playing a crucial role in political mobilization in the society.[1]

Political mobilization has been the basis for India’s liberation and has played a key role in many popular movements in independent India as well.

In the middle of the nineteenth century, Indian soldiers took part in a revolt against the British East India Company, which came to be known as the Sepoy Uprising. The revolt is regarded as ‘India’s first war of liberation’ against the British. And this mass mobilization paved the way for continued resistance to outside oppression.

Media, especially the Print Media, has all along been the backbone of all mass movements during the freedom struggle in India. Right from the time of India's First War of Independence in 1857, Hindi/Urdu journals like Payam-e-Azadi and Samachar Sudhavarshan supported the struggle for freedom, and exhorted people to throw out the British rulers. This provoked the British to hit back with the notorious Vernacular Press Act, popularly known as the Gagging Act, imposing many restrictions on the newspapers and periodicals of the day. Similarly Amrita Bazaar Patrika faced the Government's wrath and was forced to close down in 1871, before moving to Calcutta from Jessore to continue their fight against the ruling establishment.

In fact, many of the tallest leaders of the Freedom movement themselves turned journalists too, and used the press to propagate their ideas to the masses.

Even though that was not the era of social media, the mysterious ‘chapatti’ and ‘red lotus’ movement played a crucial role in planning and provisioning to sustain the war for about two years.[2]

Early in the twentieth century there followed one of the most spectacular displays of mass mobilization

that the world had ever seen when India once again rose up against the British Empire and eventually got independence from the colonial rule...

With the advent of web technology almost two decades ago, the entire scenario of political mobilization has been transformed.Fast speed, wide reach and two way communications, which are the characteristic features of this technology, have made it an essential tool for political mobilization across the world today.Based on these findings, this paper analyzes the role of media in general and social media in particular in formation of public opinion and political mobilization.

Revolution In The Field Of Political Mobilization

Social media networks such as Facebook, Twitter, YouTube and weblogs have become the most sought after platforms for organizing debates and discussions and generating awareness for political mobilization. This media has emerged as an effective tool of communication, where information is exchanged minute by minute among citizens, and this encourages 'citizenry journalism.' Needless to say that the social media has revolutionized the political landscape, and it has deeply impacted the process of political mobilization.

Social media has transformed politics in India and across the globe. It has impacted the way political parties and candidates campaign for their election. Social media provides politicians and political parties a powerful platform to connect directly with people across the country at a minimal cost.

Political Parties prefer social media for mobilizing public opinion as the traditional mass media are highly regulated by the election commission of India, which puts checks and balances in their way.

The 2008 U.S. presidential election was the benchmark as the first election to fully grasp the power and reach of the social media to impact voters. The U.S. President, Barack Obama's campaign used Facebook in an exceptional way to reach out the young voters. It worked, allowing him to win the votes of nearly 70 percent voters that were under 25 years of age.[3]

In June 2009, the U.S. State Department asked Twitter to delay scheduled maintenance on the service because it was being used by protestors angered by the results of Iran's disputed presidential election. In July 2009, a Twitter user in Jakarta beat most major news companies by tweeting about the Bali bombings.[4] And in 2012,Social media played a vital role in converting street movements into larger movements with considerable impact in Romania.

In India, the use of social media at a large scale was first noticed during the 2008 Mumbai attacks when information was shared through Twitter and Flickr. The second mass use of social media in India was the May 2009 national elections, when, for the first time, online voter registration and transparency campaigns started and first time political parties tried to reach out to voters through social networking sites.

In 2011, Gandhian crusader Anna Hazare's 'India Against Corruption' became the first ever campaign to hit cyber-space to a great extent. A number of Facebook pages and virtual groups were created and dedicated to Hazare's movements. The popularity of Hazare's movement can be gauged from the fact that the official 'India Against Corruption' page had more than 5 lakh followers.

Moreover, in the general elections of 2014 in India, social media played a crucial role in the spectacular victory of Narendra Modi led BJP.

Nowadays politicians and activists use social media to communicate with their audience and to call them either to protest, or to vote. So, the use of Web technologies has made it incredibly easy for a wide range of political parties, social activists and individual leaders to communicate with their targeted audience.

In a nutshell, social media has emerged as an essential tool of communication and has created new ways of political mobilization.

Risks Involved In Using Social Media For Political Mobilization

Social media is a complicated animal, having double edged weapon... There are a number of risks involved in using social media for political conversation.

The concept of an echo chamber is very common in politics. It is the idea that those who don't want to be open to new ideas can make themselves comfortable by surrounding themselves with only blind followers who share the same beliefs. Social media plays a key role in nurturing such concepts and makes a person feel that the make belief political world is around him and he rules the roost.

Politicians are often accused of boasting their apparent popularity on social media with legions of followers who don't exist and of using social media to smear their opponents. Worse, social media are being

used to fan violence against religious and ethnic groups.

Uninterrupted flow of fake news and falsehood is another grave risk involved with the social media. When you come across the fake news on social media again and again, it appears to you as real news, ultimately shaping your thought process in the wrong direction.

The general level of political conversation that takes place over social media is shallow. When weget used to such conversations, it leaves a deep impact on our psyche and lowers the standard of our political discourse.

Social media is often used to distract public attention from burning political issues. It's a commonplace thing that persons with vested interest create one or the other controversy or rake up provocative issues to nurture their own interest.

> According to a report by the democracy advocacy group Freedom House published in 2017, social media is increasingly being used as a tool governments use to influence elections and subvert democracy.[5]

The report found that at least 18 countries, including the United States, had their elections manipulated through social media over the last year. The spread of disinformation also contributed to the overall decline of Internet freedom across the world for the seventh year running, and contributed to violent attacks on human-rights activists and journalists, according to the report.

Russian meddling in U.S. presidential election and the Brexit vote are the burning examples of the facthow a country uses the influence of social media in its interest on the foreign soil .

The report points out that while countries like China and Russia have employed online armies to spread propaganda or shut down sites for at least a decade, automated systems like bots and algorithms are increasingly creating new ways of disrupting democracy that are harder to track, and yet to be fully understood.

Conclusion

Political mobilization has witnessed a paradigm shift since the advent of social media. This media provides a suitable platform to politicians to post a presumptive political agenda, where they can present their point of view without any journalistic interruptions. And by using the social media tools, politicians and political parties interact more efficiently with their supporters, beyond institutional and bureaucratic rigors.Political parties utilize social media to enhance their political strategies and also widen their support base through social engineering.

However, while utilizing social media platforms for political mobilization, political parties and activists must keep in mind that social media is an unbridled horsethat may cause havoc if used carelessly?Hence it must be used fairly, rationallyand keeping in mind the larger public interest.

Aswe know that immediacy, high speed and wide reachare those unique features of social media that have made it a boon for political parties and activists in mobilizing the public.However, this boon may prove to be costly and turn into a bane for the political parties and the society at large if not handled carefully.

Therefore, it's need of the hour that political parties understand the importance of responsible political campaign and chalk out their plan accordingly. It will not only promote a healthy competition in politics, but also serve a larger cause of nation building.

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