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1.	Nature's approach to counteract Diabetics	Dr. Mrs. S. P. Motghare	Pharmacognosy	Journal of Medical Pharmaceutical and allied Sciences	2018
2.	Nature's approach to counteract Diabetics	Mr. Y. N. Gholse	Pharmaceutics	Journal of Medical Pharmaceutical and allied Sciences	2018
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5.	Synthesis and Pharmacological Activity of Some 2-[6-(Phenyl) 2-Thio 1,3-Oxazin-3yl] Amino Benzothiazole Derivatives	Dr. Mrs. A. J. Asanani	Pharmaceutical chemistry	Research Journal of Pharmacy and Technology	2018
6.	Synthesis and antimicrobial activities of some novel thieno [2,3-d]- Pyrimidin-4(3H)-One derivatives	D. P. Kawade	Pharmaceutical chemistry	International Journal of Pharmaceutical Chemistry and Analysis	2018
7.	Pharma-covigilance system in India: An overview	Mr. P. N. Amale	Pharmacology	Journal of Clinical Trial and Research.	2018
8.	Pharma-covigilance system in India: An overview	Dr. Mrs. S. A. Deshpande	Pharmacology	Journal of Clinical Trial and Research.	2018
9.	Synthesis and Evaluation of Mutual Prodrugs from Clopidogrel Analogues and Salicylic Acids	Dr. D.R. Chaple	Pharmaceutical chemistry	European Journal of Biomedical and Pharmaceutical Sciences	2018
10.	Synthesis and Evaluation of Mutual Prodrugs from Clopidogrel Analogues and Salicylic Acids	Dr. Mrs. A. J. Asnani	Pharmaceutical chemistry	European Journal of Biomedical and Pharmaceutical Sciences	2018

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12.	Microneedle, An Innovative Approach to Transdermal Drug Delivery	Mr. P. N. Amale	Pharmacology	Research J. Pharm. and Tech	2018

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NATURES APPROACH TO COUNTERACT DIABETES

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Diabetes, Siddha, Naturopathy, Allopathic, Ayurveda, Homeopathy, Unani.

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ABSTRACT

Diabetes is a common chronic ailment afflicting our society from various walks of life. The astronomic increase in the prevalence of diabetes has made it a major public health challenge. This chronic illness requires continuing medical care and ongoing patient self-management, education and support to prevent acute complications and to reduce the risk of long-term complications. Diabetes care is complex and requires multifactorial risk reduction strategies beyond glycemic control. A large body of evidence exists that supports a range of interventions to improve diabetes outcomes. These standards of care are intended to provide clinicians, patients, researchers, payers, and other interested individuals with the components of diabetes care, general treatment goals, and tools to evaluate the quality of care. It is clear that optimal diabetes management requires an organized, systematic approach and involvement of a coordinated team of dedicated health care professionals working in an environment where patient-centered high-quality care is a priority. The objective of this review is to update the diabetic patient with different approaches towards the systems of medicine like N-Naturopathy, A-Ayurveda, T- Tinctures from Homeopathy, U- Unani, R- Regulating food habits, E- Exercise and S- Siddha. Educating the diabetic person regarding causes, symptoms, disorders associated with Diabetes Mellitus, Self-medication and Self-monitoring are also the good strategies to counteract Diabetes which will reduce premature death worldwide.

Synthesis and Pharmacological Activity of Some 2-[6-(Phenyl) 2-Thio 1,3-Oxazin-3yl] Amino Benzothiazole Derivatives

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ABSTRACT:

Some new hydrazino group substituted benzothiazole derivatives have been synthesized and their characterization were identified on the basis of melting point range, Rf values, IR and 1H NMR spectral analysis. The derivatives were screened for anti-inflammatory (Carrageenan-induced paw edema test in rats), analgesic (Hot plate method) and anticonvulsant (Electric shock method) activities inflammatory, analgesic and anticonvulsant activities. The derivatives exhibited significant to moderate anti-inflammatory analgesic and anticonvulsant activities.

KEYWORDS: Hydrazino, Benzothiazole, Anti-inflammatory activity, Analgesic activity, Anticonvulsant activity.

1. INTRODUCTION: [1-6]

The chemistry and biological study heterocyclic compounds has been an interesting field for a long time in medicinal chemistry. Benzothaizole derivative are an important class of compounds, which is becoming increasingly important due to their broad spectrum of biological activities. Literature survey shows that many Benzothaizole derivatives are known to exhibit pharmacological activities such as antiviral and antitumor, antiproliferative, antimicrobial, antibacterial, anthelmintic as Cholinesterase inhibitor, antidiabetic, anti-inflammatory, antimalarial, antifungal etc. Hence synthesis of such compounds are of considerable interest. It is well known that the introduction of hydrazine into an organic molecule causes dramatic changes in its biological profile, mainly due to high electronegative atoms substitutedon hydrazine and acetophenone causes increase lipid solubility. Hence, In the present study, some new derivatives of 2-[6-(phenyl) 2-thio 1, 3-oxazin-3yl] amino benzothiazole have been synthesized.

Their characterization was done by spectroscopic methods. Research in this area is still unexplored, therefore the present study is directed towards the synthesis of novel derivatives of benothiazole with good yield and enhance anti-inflammatory, analgesic and anticonvulsant activities.

2. METHODS AND MATERIALS[7-14]:

Reagents grade chemicals were used without further purification. All the melting points were taken in open capillaries and are uncorrected. The purity of the synthesized derivatives was checked by Thin Layer Chromatography.

2.1 Synthesis of substituted 2-hydrazinyl 1, 3-benzothiazole:

Take equimolar amount of substituted aniline and conc. hydrochloric acid and triturate it thus solid of salt of Aniline hydrochloride obtained. Mix aniline hydrochloride salt and sulphur into 1:3 proportion respectively stir it continuously by addition of equivalent amount of carbon disulphide in KOH and add 15-20ml of ethanol, reflux it for 5hrs 2-mecaptobenzothiazole obtained, recrystallize with methanol. Take equimolar of 2-mecaptobenzothiazole and hydrazine hydrochloride and add 10-15ml of ethanol stir it and heat mixture at 150-155°C temperature for 2-3hrs, solid mass was obtained which recrystallize from ethanol, to get substituted 2-hydrazinyl 1,3-benzothiazole derivatives.

2.2 Synthesis of 2-[6-(phenyl) 2-thio 1,3-oxazin-3yl] amino benzothiazole derivatives:

Synthesis and antimicrobial activities of some novel thieno [*2,3-d*]- Pyrimidin-4(3*H*)-One derivatives

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Abstract
Pain and inflammation are simultaneous responses in bacterial infections. In current clinical practice, the agents like antimicrobial drug are prescribed concurrently. A $POCl_3$ catalyzed, efficient, one-step and solvent-free synthesis of novel thieno [2, 3-d] pyrimidin-4(3H)-one derivatives from 2-amino-4,5-substitutedthiophene-3-carbonitrile has been developed using various aliphatic acid under conventional heating and microwave irradiation. The formation of compounds was confirmed using elemental analysis and spectroscopic techniques like FTIR, ^{1}H NMR and Mass spectroscopy. All synthesized compounds have been screened for their antimicrobial activity against *Escherichia coli* (Gram –ve strain), *Bacillus subtilis* (Gram +ve strain) for antibacterial activity and antifungal activities against *Aspergillus niger* and *Candida albicans.* The result showed that synthesized compounds exhibit weak, moderate and good antimicrobial activity. It was observed that the compounds 2a, 2c, 2d, 2e, 2f, 2g, 2j and 2k showed good antimicrobial activity whereas compounds 2b, 2i, 2j showed significant antimicrobial activity compared with standard drug Streptomycin and Amphotericin B respectively.

Keyword: $POCl_3$, Thieno[2, 3-d]pyrimidin-4 (3H)-one, Antimicrobial activity, Streptomycin and Amphotericin B.

Introduction

Medication revelation is ceaseless and iterative process, which begin with the recognizable proof of lead atom of wanted natural activity(lead age and closures with the streamlining of this lead(lead advancement) for choice of new hopeful particle in sedate improvement.[1] The attention to synthetic, physical physiological, biochemical properties, receptor locales, SAR and stereochemistry and so on is extremely huge in sedate plan for the fruitful advancement of medication particle.[2] Since sedate plan is a coordinated for building up the train which forecasts a time of adjusted medication, a medication lacking symptom. it looks to clarify impacts of natural structure or its physicochemical properties included.[3] It examines the procedures by which the medications delivered their belongings; how they respond with the cellular material of inspire a specific pharmacological impact or reaction. how they changed or detoxified, used or disposal by living being.[4] These idea are the building stones whereupon the structure of medication configuration in assembled. The various new advancements have been created and connected in tranquilize innovative work (R&D) to abbreviate the examination cycle and to decrease the costs.[5] Among them, computational methodologies have upset the pipeline of disclosure and advancement over the most recent 40 year, computational advances for medicate R&D have advanced rapidly, particularly in late decades with the extraordinary improvement of science, biomedicine, and PC ability.[6] The computational instruments have been connected in relatively every phase of medication R&D, which have incredibly changed the system of medication disclosure.[7]

Thiophene containing compounds are well known to exhibit various biological effect. Heterocycles containing the thienopyrimidine moiety are of intrest because of their intresting pharmacological and biological activities.[8-9] They bear structural analogy and isoelectronic relation to purine and several substitutedthieno[2,3-*d*] pyrimidine derivatives shown to exhibit prominent and versatile biological activities [10-11].Over the last two decades, many thienopyrimidines have been found to exhibit a variety of synthesized as potencial anticancer,[12] analgesic,[13] antimicrobial[14-15] and antiviral agents.[16]

Recently, we reported some reviews on pyrimidinethiones[17] and condensed pyrimidines, namely pyrazolo-pyrimidines[18] and furopyrimidines.[19] The work deals with the study of the synthesis, reaction and biological application of thienopyrimidines in veiw of their great importance.in the last decade, thienopyrimidines were review.[20] The three fundamental thienopyrimidines systems are thieno[2,3-*d*]pyrimidine (I), thieno [3,2-*d*] pyrimidine (II) and thieno [3,4-*d*] pyrimidine (III).This article aimed to show the recent novel precursors to synthesize thienopyrimidine derivative and reported their application in pharmaceutical and biological evaluations in the last decade.[21-23] Various synthetic approaches have been utilized for the synthesis of thienopyrimidines. Recently, Bakavoli et al. used molecular iodine as an oxidising agent for the synthesis of thienopyrimidines via an oxidative heterocyclization reaction. However, the synthesis of thienopyrimidine from 2-amino-4, 5-substitutedthiophene-3-carbonitrile requires two steps and solvant-free method to generate a series of thieno [2,3-d] pyrimidin-4(3H)-one derivatives. In recent times, microwave assisted

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Review Article Open Access

Pharmacovigilance Process in India: An overview

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Abstract

Clinical trial study of drug generally detects common Adverse Drug Reaction (ADR) but, the reaction which occurs after long duration in a specific person or population remains undetected. Pharmacovigilance (PV) is a scientific activity which keeps constant watch on the drug throughout its life cycle. In India, Indian Pharmacopoeia Commission (IPC) and National Coordination Committee (NCC) through the Central Drug Standard Control Organization (CDSCO) cordially regulate the PV activity. To build a potential PV system in India, Pharmacovilance Program of India (PvPI) have been proposed and implemented by the Indian government in 2010. The accurate detection and reporting of ADR is a heart of this system. Hence various regional, zonal and peripheral centres have been proposed for the smooth and effective reporting of ADR. Anyone can report ADR by filling the suspect ADR reporting form available online or offline to the nearest centre in suitable language. Considering Indian geographical distribution, huge population and mobile network connectivity, a toll free number and the mobile app is also provided for timely and effective reporting of ADR. The reported ADRs are collected and processed at the centres in Vigi-flow software. These centres detect signal which are reported to CDSCO and World Health Organisation (WHO) for the further regulatory action. CDSCO-WHO communicates their decision through a suitable media for the betterment of public health.

Keywords: Pharmacovigilance; Adverse drug reaction; Pharmacovigilance program of India; Vigi-flow; Central Drug Standard Control Organisation

Abbreviations: PV: Pharmacovigilance; ADR: Adverse Drug Reactions; AE: Adverse Event

Introduction

Clinical trial data should be able to potentially reflect the safety and effectiveness of a drug for the successful launching of product in the market. Generally the clinical trials are carried in limited number/controlled population and only the common adverse effects can be traced. But, the reaction which develops after long duration and occurs in a specific individual remains undetected. This may be due to the presence of individual genotype and specific physiological conditions. Any medicine is said to be safe only when its benefits are greater than associated risk. So to determine the complete safety profile of medicine/drug; a constant and continuous monitoring in a diverse population is essential which is possible in terms of Pharmacovigilance (PV). PV deals with the complete study of drug related adverse effects and other problems [1]. "Pharmakon" means "Drug" and "Vigilance" means "to keep watch or alert". Broadly speaking, all chemicals other than the food that can alter biological systems are called as drugs. A chemical which shows beneficial therapeutic effect on the body is called as a medicine. However, if it produces harmful or toxic effect then it is regarded as a poison. Thus every drug is poison depending on the dose and use. The noxious and unintended reactions occurring at normal therapeutic dose are named as Adverse Drug Reactions, (ADRs) [1]. While, the untoward events occurred during drug therapy having no relation with its use are called "adverse event" (AE) [2].

Evolution of PV

Before 1960s the health cautiousness and health care regulations were liberal and instead of drug safety, efficacy of drug was the first priority. In 1961, phocomelia due to the thalidomide tragedy forced to establish a system which ensures drug safety [3]. In 1968, World Health Organization (WHO) established the international drug monitoring program because of which the drug safety issues were globalized and systematized. A French group of pharmacologists and toxicologists coined the term PV in mid-70s. Its primary aim was to find out the harms related with drug therapy [4]. Since 19th century few medicines have been developed as safe and effective out of many investigational drugs. It was well known that, almost all drugs possess beneficial and some adverse effects. ADRs are the very widespread problem. Hence, to minimize ADR, PV came in a picture for appropriate and effective monitoring of ADR which can safeguard the public health [5].

Chronological Development of PV

1747: James Ling reported clinical trial showing effectiveness of lemon juice in prevention of scurvy.

1937: Sulphanilamide disaster, where sulphonamide was dissolved in diethyleneglycol leading to death of more than 100 people because of renal failure.

1938: The preclinical toxicity and pre-marketing clinical studies made mandatory by FDA.

1950s: Aplastic anaemia caused due to use of chloramphenicol.

1960: The FDA started hospital based drug monitoring program.

1961: Thalidomide disaster.

1963: 16th world health assembly recognized importance to rapid action on ADR.

1968: Establishment of International Drug Monitoring Program by WHO.

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SYNTHESIS AND EVALUTION OF MUTUAL PRODRUGS FROM CLOPIDOGREL ANALOGUES AND SALICYLIC ACID

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ABSTRACT
A series of 4,5,6,7- tetrahydrotheino[3,2-c]pyridine derivatives having structure analogs to clopidogrel was synthesized and prepared their mutual prodrug with salicylic acid and evaluated for anti-platelet and antithrombotic activity. The confirmation of structure was done by IR, NMR, and Mass fragmentation. All synthesized mutual prodrug were subjected to investigation for their anti-platelet and antithrombotic activity using clopidrogrel and aspirin as the standard drugs alone or in combination, synthesized mutual prodrug of clopidogrel analogues and salicylic acid shows better activity as compared to standard drugs.

KEYWORDS: Clopidogrel, salicylic acid, anti-platelet activity and antithrombotic activity.

INTRODUCTION

Several antiplatelet and antithrombotic agent are available in the market amongst them clopidogrel and aspirin are orally active inhibitor of platelet aggregation and antithrombotic agent. Clopidogrel is an adenosine diphosphate (ADP) receptor antagonist used for the reduction of myocardial infarction, ischemic heart disease, and vascular death.[2] Where as, aspirin inhibits cyclooxygenase activity and affect the production of thromboxane TXA_2. Several antiplatelet agents with different mechanisms of action are currently available for secondary prevention of ischemic stroke.[3,6] When used as a single agent, the efficacy of antiplatelet therapy is modest. Aspirin is the best-studied and most widely used antiplatelet agent for stroke prevention; however, it provides only an approximately 15% relative risk reduction for secondary prevention of stroke or other major vascular events. Combining two antiplatelet agents with different mechanisms of action was demonstrated to provide a substantial increase in efficacy.[6,12] In recent years, there have been an increasing an interest in the design and development of mutual prodrugs, which involves combining of two different pharmacophores with similar pharmacological activities which may give synergistic action. Therefore an attempt has been made to adjoin their different derivatives through an ester linkage to form a series of mutual prodrugs which were further screened physiochemical and pharmacologically. This may improve acceptability of the compound by patient in the final stage along with their additive effect against platelet aggregation & thrombus formation. Clopidogrel contains 4,5,6,7-tetrahydrothieno[3,2-c]pyridine as a basic ring. The structure of proposed derivatives was given in Fig: 1.

Compound	R_1	R_2
I	2-Cl	H
II	2-Cl	3-Br
III	2-Cl, 4-Cl	H
IV	2-Cl, 4-Cl	3-Br,5-Br

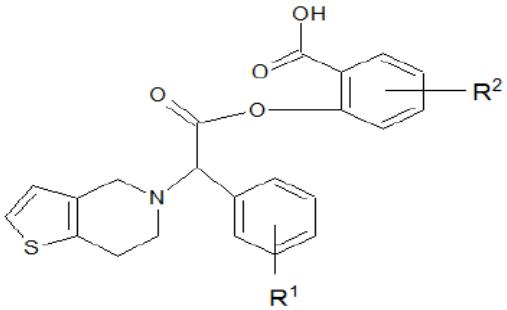

Fig. 1: Structure of proposed derivative.

MATERIALS AND METHODS

The chemicals used in the present work were AR grade and LR grade, purchased from Loba, Merck and Fisher scientific fine chemicals.

Mutual prodrugs of clopidogrel analogues and aspirin were synthesized as outline in Scheme1. The commercially available phenyl acetonitrile (1) serve as a convenient starting material in the synthesis on bromination gives 2-bromo-2-phenyl acetonitrile (2) which react with 4,5,6,7 tetrahydrothieno (3,2-c)pyridine

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REVIEW ARTICLE

Microneedle, An Innovative Approach to Transdermal Drug Delivery

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ABSTRACT:

Transdermal drug delivery system (TDDS) is a newer technique which offer delivery of drug via skin at controlled rate and prolong duration. Microneedles (MNs) are the recent advancement in the TDDS which can deliver high molecular weight drug by penetrating into the skin. MNs become popular due to avoidance of first pass metabolism, good patient compliance, rapid, easy and painless administration. Solid, coated, hollow, dissolvable and hydrogel-forming are the types of MNs having their own merits and demerits. MNs are generally prepared from silicon and used to deliver drugs, hormones, peptides, protein, vitamin, plasmid DNA, and vaccine in a safe and effective way. The working principle and the four different strategies for TDDS using a MNs array are poke and patch, coat and poke, poke and released, poke and flow technique. At present number of preclinical and clinical research is going on for the enhancement of permeability, stability and delivery of drug using MNs. This review focused on the types, manufacturing, current status and method of evaluation of MN in pharmaceutical research.

KEYWORDS: Transdermal drug delivery system, Microneedle, Biodegradable microneedle, painless drug delivery.

1.0 INTRODUCTION:

Significant improvement in the conventional drug delivery system has been made. Now a day controlled release formulations are becoming popular due to precise control on drug administration via different route in the body. A novel method of administration is developed which can control the rate and sustained the duration of action along with targeting of drug to the tissues.

Transdermal drug delivery system (TDDS) involves drug transport through the skin and reach to the systemic circulation for its action[1]. This novel approach controls the rate and reduces the side effects associated with oral therapy[2].

Skin had been viewed as an impermeable barrier to exogenous chemicals and numbers of methods are developed to enhance the transport across the skin i.e. chemical enhancers, iontophoresis, electroporation, sonophoresis, or mechanical enhancers[3]. TDDS was appeared as a potential non-invasive route of drug administration with the advantages of prolonged therapeutic action, decreased side effects, ease of use, better patient compliance, constant attainment of blood level, avoidance of first pass metabolism and no dose dumping[4]. In 1999 first transdermal patch containing scopolamine was developed to treat motion sickness[5].

Microneedles (MNs) are the advanced form of TDDS which can be employed to deliver hydrophilic and other large molecular weight drugs effectively[5]. MNs acts by making a non-invasive micro hole and penetrating the stratum cornea which creates a pathway for better drug permeation[6]. In recent decades, MNs have been extensively investigated for disease diagnosis, drug and vaccine delivery.

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