SRI SIVANI COLLEGE OF PHARMACY

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Using the Adverse Drug Event Report Database, we analyzed prednisolone-induced osteoporosis.

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ABSTRACT –

Purpose: Osteoporosis is an adverse event of prednisolone. This study aimed to assess prednisolone-induced osteoporosis (PIO) profiles and patient backgrounds by analyzing data from the Japanese Adverse Drug Event Report (JADER) database.

Methods: The current study focused only on orally administeredprednisolone. PIO was defined using preferred terms from the Medical Dictionary for Regulatory Activities. Reporting odds ratio (ROR) at 95% confidence interval (CI) and the time-to-onset profile of PIO were used to evaluate adverse events.

Results: The RORs (95% CI) of the female and male subgroups were 4.73 (4.17–5.38) and 2.49 (2.06–3.00), respectively. The analysis of time-to-onset profiles demonstrated that the median values (interquartile range: 25.0–75.0%) of PIO were 136 (74.0–294.0). The prednisolone treatment duration was significantly longer in the PIO patient group than in the non-PIO patient group. The findings suggest that patientswith rheumatoid arthritis, systemic lupus erythematosus, and nephrotic syndrome receiving prednisolone have different age-related PIO profiles.

Conclusions: Our results suggest that longer prednisolone treatment duration and larger cumulative dose might be risk factors of PIO. The potential risk for PIO should not be overlooked, and careful observation is recommended.

INTRODUCTION

Glucocorticoids are widely used to treat diseases including asthma, rheumatoid arthritis (RA), nephrotic syndrome, and systemic lupus erythematosus (SLE). Osteoporosis is a disease in which bone metabolism is lost, and fractures caused by falling or sneezing are readily revealed, as evidenced by their occurrence in as many as 30–50% of patients receiving glucocorticoid therapy (1). Prednisolone-induced osteoporosis (PIO) is the most common and serious form of secondary osteoporosis (1) and can have a significant social impact on individuals and reduce their quality of life. Therefore, appropriate clinical care is required for this condition. Various risk factors contribute to osteoporosis, including age, sex, RA, glucocorticoid therapy, and most notably, prednisolone administration.

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YIDDISH

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PHARMACO GNOSTICAL AND PRELIMINARY PHYTOCHEMICAL EVALUATION OF ROOT OF *ECBOLIUMVIRIDE*[FORSK.]ALSTON.

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ABSTRACT

In ethnomedicinal practices the traditional healers use the roots of *Ecbolium viride* in the treatment of various ailments.Scientific information on their pharmacognosy is very scant. Scientific parameters are not yet available to identify the true plantmaterialand to ensure its quality. Therefore the present work has beenundertaken to establish preliminary phytochemical profileandthenecessarypharmacognosticstandardsforevaluatingtheplantmaterial.Variousparameterslikemorphology,microscopy,powderanalysis,fluorescence characteristics andphysico-chemical constantsof the rootswere studied and thesalient diagnosticfeaturesare documented. Obviousmorphologicalfeatures and the microscopic characteristicswerefound inthe tissue structures of the roots, many diagnosticelementsandpreliminary phytochemical profile were found to be usefulevidencesforfurtherscientificinvestigations ofthismedicinalplant.

KEYWORDS:*Ecboliumviride*,Ethnomedicine,Microscopy,PharmacognosticalParameters,PreliminaryPhytochemical.

INTRODUCTION

Ecboliumviride(Forsk)Alston.(Acanthaceae)locallyknownas"*Nilambari*",isaperenialwoodyundershrubfoundoccasionalinplainsofIndiaandalsofoundinArabia,SrilankaandtropicalAfrica.Infolkmedicine, aqueousextractsofdriedrootsoftheplantareused for menorrhagia, rheumatism and jaundice (Datta andMaiti, 1968; Kirtikar and Basu, 1987). The rural people inTirunelvelidistrictofTamilnaduareusedjuiceoftherootofthisplanttothetreatmentofjaundicebythevaidhiyars.Mostofthecasesofaccidental herbalmedicinemisusestartwithwrong identificationofamedicinalplantprescribed.Manyofthetraditionalsystemshaverecordswhereonecommonvernacularissuppliedinplaceoftwoormoreentirely different species. However, no scientificparametersareavailabletoidentifythetrueplantmaterialandtoensureitsquality.Forthisallreasonswetakeaplanttobringoutanofficialmannerbythethroughinvestigationonthisplantsuchaspharmacognosticalandphytochemicalstudiesof roots of *Ecbolium viride*,whichcouldserveas avaluablesourceofinformationandprovidesuitablestandardsforthefutureidentificationofthisplant.

MATERIALSANDMETHODS

Plantmaterials

Fresh plant was collected from Wastelands of Kadyanallur,Tirunelveli(District),Tamilnadu,India.Theplantspecimenwasauthenticatedby Dr.P.Jayaraman,M.Sc.,Ph.D,PlantAnatomyResearchCentre(PARC),ChennaiTamilNadu,India(VoucherspecimenNo.PARC/2008/495). All the reagents used were of analyticalgradeobtained fromSigma ChemicalCo,St. Louis,USAorFineChemicalsLtd.,Mumbai,India.

CollectionofSpecimens

The roots of this plant were cut and removed from the plantandfixedinFAA(Formalin5ml+Aceticacid5ml+70%Ethylalcohol90ml)forhistologicalstudies;transverse sections (T.S) of the different organs of the plantmaterial.After24hoursoffixing,thespecimensweredehydratedwithgradedseriesoftertiary–butylalcohol(TBA) asper the schedulegiven by Sass,1940.Infiltrationofthespecimenswascarriedoutbygradualadditionofparaffinwax(meltingpoint58-68˚C)untilTBAsolutionattainedsupersaturation.Thespecimenswerecastintoparaffinblocks.

Sectioning

Theparaffinembeddedspecimenswereseectionwiththehelp of rotary microtome. The thicknesses of the sectionswere10-12µm.Dewaxingofthesectionswasperformedbycustomaryprocedure(Johansen,1940).Thesectionswere stained with toludine blue as according to the methodprescribed by O'Brien *et al.,* 1964. Wherever necessary, thesectionswerealsostainedwithsaffraninandFast-green.Themicrophotographsofthesectionsweremadeusing Olympus BX 40 microscope attached with Olympus DP12digitalcamera.

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JOURNAL OF CURRENT SCIENCE

Phytochemicals and antioxidants in leaf extracts of *Ginkgo biloba* with reference to location, seasonal variation and solvent system

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ABS T RA CT

Aims: To determine the influence of location, seasonal variation and solvent system in production of phytochemicals and antioxidants from ginkgo leaves.

Methods: Total phenolic and flavonoid contents and antioxidant activity in ginkgo leaf extracts were estimated spectrophotometrically. Factorial analysis was performed to correlatetheinfluenceoflocation,seasonandsolventonproductionofphytochemicals and antioxidants.

Results: Totalphenolicandflavonoidcontentsaswellastheantioxidantswereestimated maximum in autumn. Among solvents, acetone/water extracts gave best results for phenolic and flavonoid contents while methanolic extracts were best for antioxidants. Phenolic content, the predominant indicator of phytochemicals, showed significant cor- relation with antioxidant activity.

Conclusion: Factorial analysis among location, season and solvent with respect tothe phytochemicals and antioxidants, was found to be statistically significant. Presence of phytochemicalsalongwiththeprotectivefeatureintheformofantioxidantsisindicative of the importance of this species in pharmacological industry.

Keywords:Ginkgobiloba(ginkgo) Phytochemicals PhenolicsAntioxidantsIndianHimalayanRegion(IHR)

1. Introduction

Medicinal plants are known potential source of many phenolic compounds and antioxidants. Among these, poly- phenols in particular, have been recognized for antioxidant activity and many other health benefits.[1]Phenolic and flavonoids,asnaturalantioxidantsandfreeradicalscavengers, haveinvolvedsubstantialinterestduetotheirimportancein food and pharmacological industry.[2]Factors, such as geographic location, age of the plant, season, associated microflora, nutritional status, and environmental stress are known to influence the secondary metabolite profile of a particular plant species. Seasonal variation in trees, for example from dormant to active phase, brings progressive changes in traits like production of phytochemicals.[3]Be- sides,optimizationofmethodswithrespecttosolvent system is important for determination or extraction of the phytochemicals from any plant species.

*Ginkgobiloba*L.(familyGinkgoaceae),commonlyknown as living fossil, harbors many beneficial medicinal proper- ties. Traditionally, it has been used on an extensive basis, either as food or medicinal component, almost all over the world.Theleafextractofginkgocontainspharmaceutically imperative flavonoids, glycosides and ginkgolides which expand blood flow, act as antioxidant and mainly used as memory enhancer and anti-vertigo.[4]The present study is focused on the evaluation of phytochemicals and antioxi- dantsinleafextractsofginkgoalongwiththefactorial analysis among locations × seasons, seasons × solvents and locations × solvents.

2. Materialsandmethods

Plantmaterial

Ginkgo leaves were collected in three seasons fromfive different locations referred as GB1 (Kalika, Almora), GB2 (Chaubatia,Almora),GB3(Snowview,Nainital),GB4(High court,Nainital)andGB5(Glenthorn,Nainital)inUttarakhand, India.[5]The leaves, dried at room temperature, were grounded to fine powder and stored at 4 °C for further analysis.

Preparationofextracts

Dried leaf powder (10 g) was mixed with 25 ml methanol (ME), ethylacetate(EA),n-butanol(n-B),acetone/water(AW)(3:2) and

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B.Santosh Kumar *et.al.*,/International Journal of Engineering & Science Research

Anticonvulsant potential of commonly practiced formulations of *Brahmi* (*Bacopa monnieri* Linn.) inWistar rats

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A BSTRACT

Objective: Brahmi (*Bacopa monnieri* Linn) is an important herb in Ayurved, reported to have a wide range of medicinal properties. In clinical practice it is usually prescribed in its various dosage forms. The most common of those are *Brahmi Ghrita* (BG) and *Saraswatarishta* (SW). Use of *Brahmi* as anti-convulsion drug is well documented in scientific literature however; no data is available on the effect of its commonly practiced dosage forms. Hence, the study was carried out to evaluate anti-convulsion potential of BG and SW.

Method: The anticonvulsant activity of BG and SW was studied against seizures induced by Maximal Electroshock (MES) in rats and phenytoin (25 mg/kg Intra Peritoneal) was used asstandard. Different phases of convulsions (Hind limb extension, jerking, grooming, tail straub and recovery) were recorded as index of convulsion. The brain tissue was dissected out for biochemical analysis.

Result: Treatment of rats with SW and BG in Maximal Electroshock (MES) induced con- vulsions showed statistically significant potential as compared to control groups ($P \leq 0.01$ or $P \leq 0.001$). SW or BG showed significant improvement in all the phases of convulsion except grooming response. Brain tissues of test animals evaluated for malondialdehyde (MDA) levels showed the higher levels in phenytoin group than in BG and SW treated groupsuggesting protection of brain tissue from oxidative damage.

Conclusion: The results indicated SW and BG to be effective in promoting restorative and neuroprotective action in convulsions thus suggesting a further scope of evaluation of these formulations as an adjuvant treatment for convulsions

Introduction

Medhya drugs are the best gifts of traditional Ayurvedic systemto mankind, which are commonly used for maintenance as well as treatment for a range of neurocognitive disorders. Many herbal, mineral and animal drugs are being practiced with the potential to be used in such conditions.[1] Single herbs and polyherbal formulations like *Brahmi* (*Bacopa monnieri* Linn), *Vacha* (*Acorus calamus* L.), *Shatavari* (*Asparagus race- mosus*), *Brahmirasayan* etc. mainly categorized in this special-ized group of *Medhya* drugs and have a long history of use in their myriad effects on the Central Nervous Systems.[2]

Of all these, *Brahmi* is one of the most commonly used herbs, the neurocognitive effects of which are well estab-lished.[3] The herb although very commonly practiced by Ay- urvedic fraternity, it is mainly used in the form of its polyherbal formulations like *Saraswatarishta* (SW) and *Brahmi Ghrita* (BG), *Saraswat Choorna* etc. Other drugs associated withthe herb and dosage form prepared is anticipated to boost the potential of herb and to reduce therapeutic dose. Most of the studies are found on evaluating neurocognitive benefits of these formulations.[4e7] In the traditional practice however formulations are also being used for their promising action on epileptic conditions to prevent the attacks and reduce after effects with reference to cognitive deficits.[8] However, very fewstudies can be found in evaluating these effects of the formulations.

"Epilepsy" is a disorder of the brain characterized by an enduring predisposition to generate epileptic seizures and imbalance in brain electrical activity[9] which is commonly correlated to "*Apasmara*" or "*Apasmriti*" (loss of consciousness or memory) in Ayurved. It is the second most unrelieved common neurological disorder[10] fundamentally involving different neurological conditions/disturbances and symptoms with varying disease etiology in different people.[11,12] A known characteristic feature of epilepsy is seizures (periodic neuronal discharge), which is becoming important medical problem and needs urgent remedy.

Currently a number of Antiepileptic drugs (AEDs) are in practice with some beneficial effects, but none of these drugs can completely control seizures. Along with this, a number ofside effects are eventually increasing the cost for epilepsy careand drug induced morbidity.[13,14] Thus it becomes imperativeto search for a safer and potential alternative to the existing treatment from traditional medicinal systems. This study aims to evaluate the anti-convulsion potential of commonly used formulations BG and SW with well-known antiepileptic drug Phenytoin as standard by using Maximal Electroshock (MES) induced convulsions. ingredients for the formulations were collected from a local *Ayurvedic* vendor and identified by *Ayurvedic* practitioner. Both the

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Analyzing the antibacterial and antioxidant properties of Pimpinellatirupatiensis extracts in sequence

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ABSTRACT

*Background:*An increasing demand for natural additives has shifted the attentionfrom synthetic to natural antioxidants. As leafy vegetables are found to be good source of an- tioxidants and the present study is to examine the antioxidant potential and antimicrobial activity of leaf extracts of *Pimpinella tirupatiensis*.

*Methods:*Antioxidant potential of leaves of*P. tirupatiensis*was studied usingdifferent methods like DPPH, nitric oxide, hydrogen peroxide scavenging activity. Reducing power and antimicrobial activity was estimated by using both gram positive and gram negative microorganisms by using DMF as solvent.

Results: The aqueous extracts showed maximum scavenging activity of DPPH followed by nitric oxide, hydrogen peroxide and reducing power respectively. Benzene and alcoholic extract showed maximum antimicrobial activity.

*Conclusion:*Substantial amounts of antioxidants including vitamins C and E, carotenoids, flavonoids, phenols and tannins etc. can be utilized to scavenge the excess free radicalsfrom the body.

*Keywords:*Antioxidant potential Antimicrobial activity Leaf extracts*Pimpenellatirupatiensis*

1. Introduction

Pimpenellatirupatiensis(Apiaceae)isdistributedintheforestof Tirupati in Andhra Pradesh commonly known as adavi kothimeera(ForestCoriander).Itisusedforthetreatment of External inflammation, Diuretic, treatment of bladder distress,Asthma,Aphrodisiac,Skindiseases,Ulcers,Blooddisorders, Toothache and Hepatoprotective.[1]Freeradicals have been implicated to the causation of ailments such asliver cirrhosis, atherosclerosis, cancer, diabetes etc.[2]Reactive oxygen species such as super oxide anions (O_2), hydroxyl radicals (OH) and nitric oxide (NO) inactivate the enzymes and damage important cellular components causing injury.[3]Antioxidantsmayofferresistanceagainsttheoxidative

Table1eDPPHradicalscavengingactivity.

S. No	Extracts	Concentration(mg/ml)and%inhibition(SEMSD)*					IC_{50}
		20*	40*	60*	80*	100*	e
1	PEE	19.80 0.46	24.39 0.75	27.26 0.62	31.38 0.87	34.280.77	e
2	CHE	30.45 0.35	38.80 0.88	40.25 0.84	43.78 0.54	45.461.00	e
3	ACE	35.13 0.89	38.42 0.32	41.99 0.22	45.52 0.42	480.16	e
4	ETH	38.17 0.82	44.03 0.66	46.94 0.38	48.35 0.11	49.640.56	58
5	WTR	41.96 0.90	46.15 0.06	52.83 0.66	57.62 0.24	62.960.54	52
6	VitC	46.19 0.17	48.39 0.28	55.38 0.27	60.36 0.10	67.640.41	45

PEE:pet.Ether,CHE:chloroform,ACE:acetone,ETH:ethanol,WTR:water,VitC:standard.
*ValuesaremeanSD,*n*¼3.

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Dr.K. Rajkiran/International Journal of Management Research & Review

An attempt in Canada to choose success measures for hospital pharmacy practice

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Abstract

Activity-based funding is a method of funding hospitals according to the type and volume of services provided and adjusted to theirpatient population. Currently, pharmacy practice is mainly evaluated with costs and volumes, which are insufficient to properlymeasure the contribution of pharmacists. Facing the province of Quebec statewide implementation of activity-based funding, expertcommittees were set up to develop a set of indicators using a predefined framework to assess pharmacy performance throughout allhospital activities and patient care. Through consultations, partners and stakeholders showed strong support for the initiative, put-ting more emphasis on the assessment of appropriateness as well as quality and safety. Among the different roles of pharmacists,respondents favoured the assessment of the pharmaceutical care and education of trainees and colleagues. Of the 150 candidate indi-catorsinitiallyidentified,24wereselected,ofwhich13wereprioritisedforexperimentation.

Keywords:hospitalpharmacyservice,benchmarking,performanceframework,qualityofhealthcare,taskperformanceandanalysis.

INTRODUCTION

With the pressure of demand–supply balance increasingon the healthcare system, hospital activity-based fund-ing, or 'pay-per-performance', is growing in popularityamonggoverningadministrations.[1–4]Underactivity-basedfunding,hospitalsarepaidapredefinedamountof money for each patient.[5,6]This is based on patients'specific conditions and factors that may add complexityor cost to their care.[5,6]As such, many pharmaceuticalactivities may be considered intangible and costly extrasif adequate tools are not available to assess their contri-bution to performance.[7]Consequently, there is a need tobetter quantify the activities, impacts, and performanceof hospital pharmacy practice. Such information couldprovidevaluabledatatoestablish,maintain,orevenexpand pharmacy services based on an objective evalua-tionofpharmacists'contributiontothepatientcarecontinuum.[8]A reliable performance assessment can alsoguide policy development, improve the quality of care,andincreaseaccountability.[9]

Many authors looked at the selection or implementa-tion of different indicators to assess the quality of care,the workload, or for the benchmarking of a pharmacydepartment.[8–15]Shawahnaconductedascopingreviewtoidentify,describe,andsummarisedifferentstudiesusing the Delphi technique to develop quality indicatorsof pharmaceutical care.[16]This author found 24 studiesrelated to the provision of pharmaceutical services rele-vant to medicines, most of which were published in thelast decade. Not only were these studies limited to clini-cal care activities, many of them only concerned singlehospitalsorsinglepracticesectors.[16]

A few attempts to assess hospital pharmacy perfor-mance on a large scale have been reported. Initiativesfrom the United States[8,11]and Europe[10,12–15]used frame-works to assemble a set of indicators. Such benchmark-ingprojectsvarybetweencountriesinlinewiththevariation in priorities, activities, and methods of devel-opingandevaluatingpharmacypractices.InCanada,no nationwide system enables comparisons and bench-marking of hospital pharmacy practice. The CanadianSociety of Hospital Pharmacy has promoted the ClinicalPharmacy Key Performance Indicators (cpKPIs), whichweredevelopedviaarobustapproachandareofutmostsignificancetoassesspharmaceuticalcare.[9]

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Assessing pharmacy high-needs criteria: a method for determining which hospitalized patients are most likely to have adverse drug reactions

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Abstract

Clinical pharmacy services can be costly, and in resource-constrained healthcare services, should be prioritised towards patients withthe greatest potential risks. At our health network, high-needs pharmacy criteria were developed to identify patients at greatest needofclinicalpharmacyservices.Thisretrospectivestudyof761patientsadmittedtofourhospitalsinmetropolitanMelbourneaimedto evaluate the ability of the high-needs pharmacy criteria to identify patients at increased risk of medication-related adverse clinicaloutcomes. Patients' clinical records were reviewed to determine if the patient met one or more elements of the high-needs criteria.Data on length of stay, 30-day readmission rate, medication-related problems, and medication-related incidents were obtained fromtheelectronicrecords.Patientsmeetingoneormorehigh-needscriteriahadalongerlengthofstay(mean6.7daysvs3.1days,$p < 0.01$), were more likely to be readmitted within 30 days (27% vs 16%, $p < 0.01$) and had a higher rate of medication-relatedproblems (15% vs 7.6%, $p < 0.01$). The sensitivity of the high-needs criteria to identify patients with medication-related problems,medication-related incidents, or readmission within 30 days was above 80%. In conclusion, the high-needs pharmacy criteria identi-fiedolderpatientswithlongerlengthofstaywhoareatgreaterriskof30-dayreadmissionandmedication-relatedproblems.

Keywords:clinicalpharmacy,medicationrisk,medicationreview,pharmaceuticalneedsassessment,pharmacistconsultation.

BACKGROUND

Clinical pharmacy services aim to minimise medicationrisks, improve patient safety, and optimise health out-comes.[1]Inpatientclinicalpharmacistactivitiesin Australiaincludemedicationreconciliation,medicationclinicalreview,therapeuticdrugmon itoring,adversedrugevent(ADE)management,providingmedicine-relatedinforma-tion to patients, and ensuring continuity of medicationmanagementattransitionsbetweencaresettings.[1]

Medication-related problems (MRPs) refer to circum-stanceswhichinvolveapatient'sdrugtreatmentthatactually or potentially interferes with the achievement ofan optimal outcome.[2]MRPs include medication errors,ADEs, and adverse drug reactions (ADRs). An ADE isdefined as harm caused by appropriate or inappropriateuseofadrugwhereasanADRisasubsetoftheseevents, where harm is directly caused by a drug underappropriateuse.[3]

Clinicalpharmacyservicescanbecostlyandinresource-constrained healthcare services should be priori-tised towards patients with the greatest potential risks.[2,4]Among healthcare organisations, prioritisation is com-monly achieved via organisational policies or individualclinical judgement.[5,6]Tools which have been developedto date frequently target specific patient groups and areoftennotvalidatedagainstclinicaloutcomes.[2]

The few tools which have been validated against clini-cal outcomes have been validated against the patients'risks of developing an ADE or MRP.[7–9]Less commonly,outcomes used to validate risk assessment tools includethe30-dayreadmissionrate.[10]Previousstudieshaveoftenbeen limited to specific clinical populations, includingobstetrics,[11]geriatrics,[9–12]paediatrics,[13]orcardiology,[7]thuslimitingthegeneralisabilityofthesetools.

At our health network, prioritisation of clinical phar-macyservicesoccursthroughtheuseofhigh-needs(HN) criteria (Table 1), a modification of the Society ofHospitalPharmacistsofAustralia(SHPA)*FactSheet:Risk factors for medication-related problems*.[14]The risk fac-tors identified by SHPA were considered too extensiveforefficientuseindailypractice,thereforetheHN

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Neuropsychiatric side effects described by patients using bictegravir with metric itabine/tenofovir alafenamide

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Abstract

The integrase-inhibitor bictegravir combination antiretroviral therapy (ART) Biktarvy became available in Australia in October 2018.Neuropsychiatric adverse drug reactions (ADRs) are associated with bictegravir and may affect persistence and adherence to treat-ment. The aim of this study was to describe the type and frequency of reported neuropsychiatric reactions in people dispensed Bik-tarvy.Ethicsapprovalwas obtained from Alfred Hospital EthicsCommittee (Project No. 541/20). Datawere collected from recordsof people dispensed Biktarvy between October 2018 and May 2020 and who subsequently had a new neuropsychiatric reactionreported to the organisation's ADR Review Committee. Data were sourced from ADR reports, medical and dispensing records, andincluded demographics, medical history, and concurrent medicines with known psychiatric adverse reactions. Data were analyseddescriptively. Biktarvy was dispensed to 1265 patients. Twenty-two (1.7%, 95% confidence interval [CI] 1.0–2.5%) people reported 50neuropsychiatric ADRs, including abnormal dreams (n = 13), sleep disorders (n = 5), and headaches (n = 5). The median time frominitiation to reaction was 13 (interquartile range [IQR] 4–94) days. Eighteen patients discontinued Biktarvy (1.4%, 95% CI 0.85–2.24).There was no statistically significant difference in discontinuation of Biktarvy between people who did or did not have a pre-existingpsychiatric diagnosis (p = 0.58). Concurrent medicines with known psychiatric adverse reactions were used by 10 people. A low rateof reported neuropsychiatric ADRs lead to discontinuation of Biktarvy, similar to rates in Biktarvy trials. This study adds to thepost-marketingsurveillancedataofBiktarvytoleranceamongstpeoplelivingwithhumanimmunodeficiencyvirus(HIV).

Keywords:adversedrugreactions,bictegravir,anti-infectives,neuropsychiatricadverseeffects,antiretroviral.

INTRODUCTION

First-linetherapyfortreatmentnaïveAustralianswithHIV-1 is an integrase inhibitor-based regimen.[1]Optionsfor this regimen include a combination tablet consistingof bictegravir, tenofovir alafenamide, and emtricitabine(Biktarvy), which became available in Australia in October2018toalimitednumberofpeoplepriortolistingonthePharmaceuticalBenefitsScheme(PBS)on1March 2019. Biktarvy provides an advantage over existingtreatmentoptionsduetothesingletablet combinationtherapy,oncedailydosingandnorequirementforHLA-B*5701testingpriortoinitiation. Adherenceandpersistencetoantiretroviraltherapyisessentialtoreducethetransmission,morbidity,andmortalityofHIV.[3,4]Persistencecanbeaffectedbyadverserea ctions.[5]Biktarvydiscontinuationratesfromneuropsychiatricadversereactionsintheinitialrandomisedcontrolledtrials(RCTs)werereportedtobe0–1%.[6–9]Neuropsychiatricadversereactionsappeartobeassociatedwiththeintegrasestrandtransferinhibitorclassandhavebeenmorefrequentlyassociatedwithdolutegravir.[10]Neuropsychiatricadversereactionsidentifiedintheoriginaltrialsfor Biktarvyincludedheadacheandinsomnia.[6–9]Post-marketingevidenceindicates,however,thatneuropsychiatricreactionsmaybeofgreaterconcernwithBiktarvy.[11]This study aimed to investigate the frequencyandnatureofneuropsychiatricadversereactionsreportedinpeopledispensedBiktarvy.

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A practice update on medication dose estimate in people with chronic renal disease

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Abstract
The increasing prevalence of chronic kidney disease (CKD) and the disparities in treatment availability make it a pressing public health issue. A person's glomerular filtration rate (GFR) is the most essential metric for drugs that the kidneys filter out of the blood, and it is also the most reliable indicator of general renal function. It is common practice in clinical practice to utilize equations that estimate GFR based on verified prediction equations. Clinical pharmacists from the Australian Society of Hospital Pharmacists (SHPA) Specialty Practice streams in nephrology, oncology and haematology, critical care, and infectious diseases formed the Working Group that drafted this practice update. For clinical pharmacists who make dosage choices based on estimated GFR using equations, this article is meant to provide practical advice. Summarized and contrasted with direct measurements of kidney function using exogenous markers are the limitations of the many equations in use, including the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI), the Modification of Diet in Renal Disease, and the Cockcroft-Gault equation. Regular use of the CKD-EPI equation as the principal metric for renal function is advised. When deciding on a new dosage, it is important to take the patient's and the disease's specific characteristics into account. Monitoring the signs, symptoms, and illness outcomes, the appearance of adverse reactions or medication-induced diseases, and the use of therapeutic drug monitoring (if available) to modify dosages appropriately are all important ways to continually check kidney function and the response to treatment.

Keywords:chronickidneydisease,medicationdosing,eGFR,estimationofkidneyfunction,glomerularfiltrationrate.

INTRODUCTION

The increasing prevalence of chronic kidney disease (CKD) and the disparities in treatment availability make it a pressing public health issue.About 1.7 million persons, or one in ten, in Australia suffer from chronic kidney disease (CKD).As a result of socioeconomic determinants of health, the prevalence of chronic kidney disease (CKD) is double among individuals of Aboriginal and Torres Strait Islander descent compared to non-Indigenous adults, and rates are much higher for those residing in rural and isolated locations.3. Nevertheless, only around 10% of the population is aware that they have CKD, which means that treatments that might decrease the disease's progression are not started until much later. Individuals at risk are also more likely to take their medications incorrectly, which may worsen their acute kidney damage (AKI).Approximately 20% of all AKI cases are medication-induced, and this kind of AKI may either cause new instances of CKD to develop or worsen preexisting CKD.To avoid unfavorable medication-related consequences, such as renal function loss and other metabolic problems, and to ensure that patients get the best possible therapy, it is crucial to accurately estimate kidney function in order to diagnose AKI or CKD.6. The most essential way to describe the clearance of medications that are removed by the kidneys is by measuring the glomerular filtration rate (GFR), which is widely recognized as the greatest overall indicator of kidney function. In clinical practice, validated prediction equations for estimated GFR (eGFR) are often used.
Standards of practice in nephrology, oncology and haematology, critical care, and infectious illnesses have been developed by the Society of Hospital Pharmacists of Australia (SHPA) to outline the best practices for the safe and effective administration of medications to patients. Clinical pharmacists from various Specialty Practice streams formed a SHPA Working Group to develop this practice update. For clinical pharmacists who employ GFR estimation equations in medicine dosage choices, it is meant to provide realistic recommendations. It explains potential sources of bias or imprecision and draws attention to the many shortcomings of these equations.

GLOMERULARFILTRATIONRATE

By monitoring the serum concentrations of endogenous filtration markers or the clearance of exogenous filtration markers, one may determine the glomerular filtration rate (GFR), which is the rate at which the kidney glomerulus filters plasma to create an ultrasound.10

Assaying Glomerular Filtration Rate using External Filtration Markers

Serial measurements of glomerular filtration rate (GFR) utilizing an external marker constitute the gold standard for accurate evaluation of renal function. Medication dosage selections in routine clinical practice do not need the time-consuming and expensive procedure. For this aim, exogenous filtration markers including inulin, sinistrin, iohexol, and iothalamate are used. These markers are neither reabsorbed or released by the tubules, and they are freely filtrated by the glomerulus.10

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Thyroid disease treatment for the elderly

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Abstract

Thyroid disorders are common in older people and cause significant morbidity. There may be fewer symptoms at presentation and increased susceptibility to adverse events, making diagnosis and management more challenging. The approach to management of thy-roid disorders in older people differs from that for younger individuals. Factors that need to be considered include frailty, concurrent illness, polypharmacy, drug–drug interactions, and target organ sensitivity to treatment. This review discusses the clinical presentation, pathophysiology, and management of thyroid disorders and the effects of medications on thyroid function in older people.

Keywords: thyroid diseases, drug therapy, aged.

INTRODUCTION

The incidence of thyroid disorders in older people isincreasing worldwide, primarily due to increased lifeexpectancy.[1] The clinical presentation of thyroid disor- ders often differs in older people compared to younger people. Symptoms may be subtle, making diagnosis more difficult. Untreated thyroid disorders can have sig- nificant morbidity.[2] In this review, we discuss changes in thyroid anatomy and physiology, overt and subclini- cal hypo- and hyperthyroidism, thyroid cancer, impactof thyroid disorders on cardiovascular disease, effects of medications on thyroid function, and thyroid hormone supplementation.

CHANGES IN THYROID ANATOMY ANDPHYSIOLOGY WITH AGEING

Physiological alterations within the thyroid gland and the hypothalamic pituitary thyroid axis occur with age- ing. Older people, including those without thyroid dis- ease, may have higher concentrations of thyroid stimulating hormone (TSH). The NHANES III study examined 17 353 people ≥12 years.[3] In participants without thyroid disease, 40% of individuals >80 years had a TSH greater than 2.5 mIU/L compared to 10.6% of individuals in their 20s.[4] Not all population-based studies have demonstrated rising TSH levels in olderpeople, for example the converse was noted in the Rot- terdam study.[5] Generally, free t4 (ft4) levels remain sta- ble; however, free t3 (ft3) levels decrease, with or without an associated increase in reverse t3 (the meta- bolically inactive form of ft3).[6,7]

The cause of rising TSH levels with ageing is unknown. It may be a central response to mitigate excessive catabolism and reduction in basal metabolism. Alternatively, it may be reactive, secondary to reduced physiological metabolism inherent with ageing.[8,9] Given ft4 levels remain stable despite a change in TSH, it is not thought to be related to higher rates of thyroid pathology.[7]

Changes in absolute TSH levels cannot be considered in isolation because changes also occur on a molecular and receptor level. TSH bioactivity changes, affecting its signalling capacity on the thyroid gland, iodine absorp- tion is decreased, and there is a likely change in the set- point of the thyroid receptor, affecting the way thyrocytes respond to TSH.[6,8] Consequently, there may be decreased ft4 and ft3 production. Furthermore, older people are affected by blunted thyrotropin-releasing hormone (TRH) response and loss of circadian variation in TSH release.[9–11]

Distinguishing between age-related changes versus pathology with likely adverse outcomes without treat- ment is a challenge for clinicians.

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Approaches to reporting medication errors at a regional hospital: a qualitative investigation

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Abstract

To set the stage, medication mistakes are occurrences that have the potential to result in the improper administration of medications or injury to patients. When compared to urbanites, the health results for Australians residing outside of major cities are much worse. Different healthcare providers have different attitudes, which in turn causes different medication error reporting (MER) methods. MER has the potential to enhance hospital and community-based patient safety.

The purpose of this study is to investigate how healthcare providers (HCPs) at an Australian rural hospital view, use, and advise on MER.

Approach: Healthcare providers' perspectives, routines, and suggestions about the most effective use of drug error reports were elicited using semistructured interviews. From November 2021 to February 2022, healthcare providers (nurses, pharmacists, and physicians) from all areas of practice were recruited for the research. Using theme analysis, the interviews were recorded and transcribed. The Human Research Ethics Committee at Goulburn Valley Health (GVH) gave its stamp of approval (Reference no: GVH 35/21). Participants were asked to read an information leaflet and fill out a written permission form in order to demonstrate their informed consent.

Twelve healthcare providers were interviewed, and four themes emerged: factors that encourage or discourage reporting, the advantages and drawbacks of reporting prescription errors, and suggestions for improving the reporting process. The advantages of MER were well-understood among regional HCPs. Pharmacists were worried about how reporting may affect their relationships with other professions, whereas nurses reported more prescription mistakes than physicians. Among their suggestions was the need to improve electronic system education and to standardize the definition of pharmaceutical errors.

Conclusion: Health care providers' knowledge of MER's importance did not translate to uniform application. We suggest instituting more structured feedback to clinicians after tests, educating students about pharmaceutical mistakes, providing more protected learning time, and training using the incident reporting program. We advocate the adoption of further solutions, such as electronic prescription, and the implementation of modifications to workplace cultural practices that improve organizational procedures and facilitate mistake reporting without fear of penalties.

Keywords: medication errors, medication error reports, medication safety, hospital.

INTRODUCTION

Around 1.2 billion Australian dollars (AUD) is spent each year on hospital admissions that are thought to be medication-related, accounting for 2-3% of total admissions.1 In addition, there is a 28% increase in the likelihood of hospital readmission during the next month due to inadequate medication management either during or soon after admission.2 According to the World Health Organization (WHO), an adverse drug event (ADE) is any negative medical occurrence that might happen when taking a pharmaceutical, even if it isn't directly related to the therapy.3 Adverse drug responses (ADRs) caused by the drug's characteristics, prescription mistakes, and overdosing all fall under this category.3

Inappropriate medicine usage or injury to patients may occur as a result of pharmaceutical mistakes, which are avoidable occurrences. There are a variety of approaches to error detection, but voluntary reporting is among the most common.4 Medication safety relies on the voluntary reporting of mistakes since it allows us to get insight into the effects of medication errors and learn from them. Finding system weaknesses, prioritizing actions, and aiding planning are all aided by medication error reporting (MER).5 Future patient harm in both community and hospital settings may be reduced by systemic improvements that are a result of analyzing drug mistake reports.6

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An unusual occurrence of extra pyramidal side effects perhaps caused by a combination between paliperidone and voriconazole

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Abstract

Setting the Scene: It is believed that paliperidone, an active metabolite of risperidone, has negligible pharmacokinetic drug-drug interactions (DDI) potential because of its low metabolism by CYP3A4 and CYP2D6. A potential interaction between paliperidone and voriconazole has been observed, however, based on interactions between risperidone and strong CYP3A4 inhibitor azoles, there have been reports of DDIs regarding other drugs.

Purpose: To detail the first known case of a drug-drug interaction (DDI) resulting in extrapyramidal side effects (EPSEs) involving paliperidone and voriconazole.Medical information:Confidence that clozapine was the cause of febrile neutropenia led a 34-year-old man to seek medical attention. Due to a suspected fungal infection, the patient's empiric piperacillin/tazobactam medication was adjusted to include voriconazole and paliperidone instead of clozapine. It is believed that the patient had antipsychotic-induced tremors and stiffness in all of her limbs two days after beginning voriconazole. Withholding paliperidone caused the EPSEs to resolve.

Results: The patient was able to take greater dosages of paliperidone for an extended period of time before switching to clozapine. A possible paliperidone adverse drug response (ADR) owing to significant CYP3A4 inhibition by voriconazole was indicated by the development of EPSEs two days after azole commencement. Additional research, including therapeutic medication monitoring, is necessary to validate these results, but this example seems to be the first recorded instance of this earlier theoretical DDI in reality.

It is important to keep an eye on patients for adverse drug reactions (ADRs) when paliperidone is given with CYP3A4 inhibitors because of the potential for pharmacokinetic drug-drug interactions.

Keywords: paliperidone,voriconazole,azole,druginteraction,CYP3A4.

INTRODUCTION

An active metabolite of risperidone, paliperidone is an atypical antipsychotic.Paliperidone has a higher incidence of extrapyramidal side effects (EPSEs) compared to other atypical antipsychotics.2Paliperidone is mostly eliminated from the body via the kidneys (59% unaltered in urine), and only 6.5% of the dosage is accounted for by cytochrome P450 3A4 (CYP3A4) and cytochrome P450 2D6 (CYP2D6) metabolism.Paliperidone is a substrate for the P-glycoprotein (P-gp).1

Paliperidone DDIs have been reported seldom (Table 1). Some of the mechanisms include alterations in gastric transit and altered CYP3A4, CYP2D6, or renal P-gp function.Some DDIs have caused significant shifts in paliperidone concentrations 3-5,7 and severe psychosis (9, 10).10According to Stockley's Drug Interactions, paliperidone has the potential to interact with voriconazole, a powerful CYP3A4 inhibitor, in a way that might increase the corrected QT interval (QTc). This is based on the DDIs between risperidone and azoles.It seems that no instances of this hypothetical interaction have been documented so far.

CASEREPORT

The Royal Melbourne Hospital Human Research Ethics Committee (10 July 2023, Coordinator, Office for Research) exempted this study from local policy regulations that pertain to research. The patient's consent to be published was acquired and recorded in a way that was free, prior, and informed.

It was thought that clozapine was the cause of febrile neutropenia when a 34-year-old male patient arrived to a quaternary referral metropolitan teaching hospital in Melbourne, Australia.Previous stabilization of the patient was achieved on

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1	Text book of Pharmaceutical Analysis	U.Upendra Rao,Dr.K.Raja Rajeswari & T.Anusha	Pragathi Publications	2023
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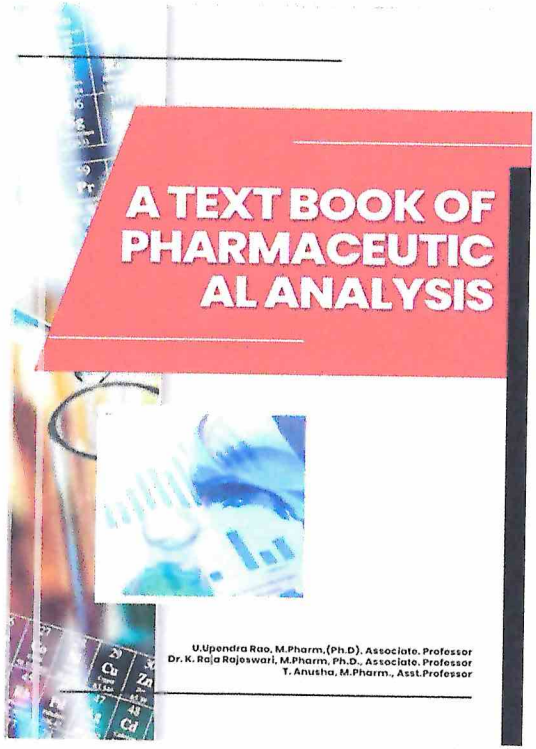

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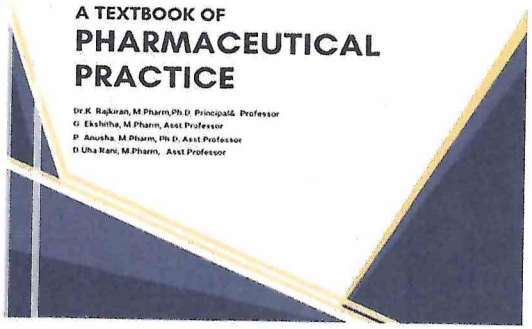

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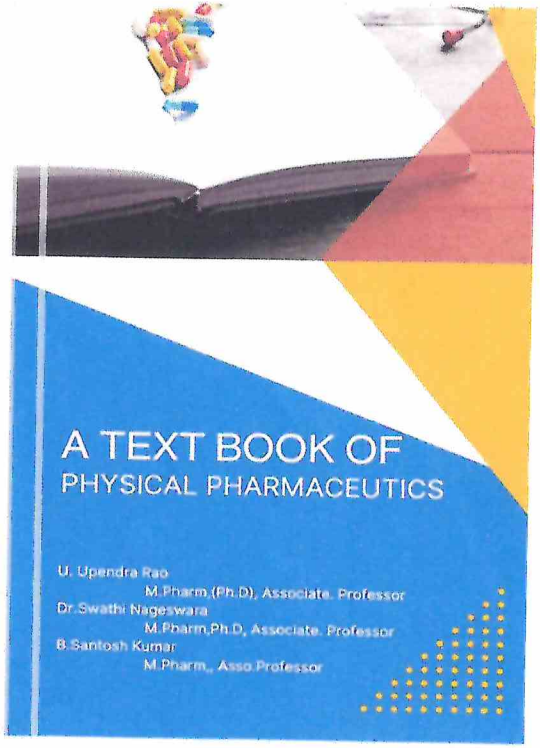

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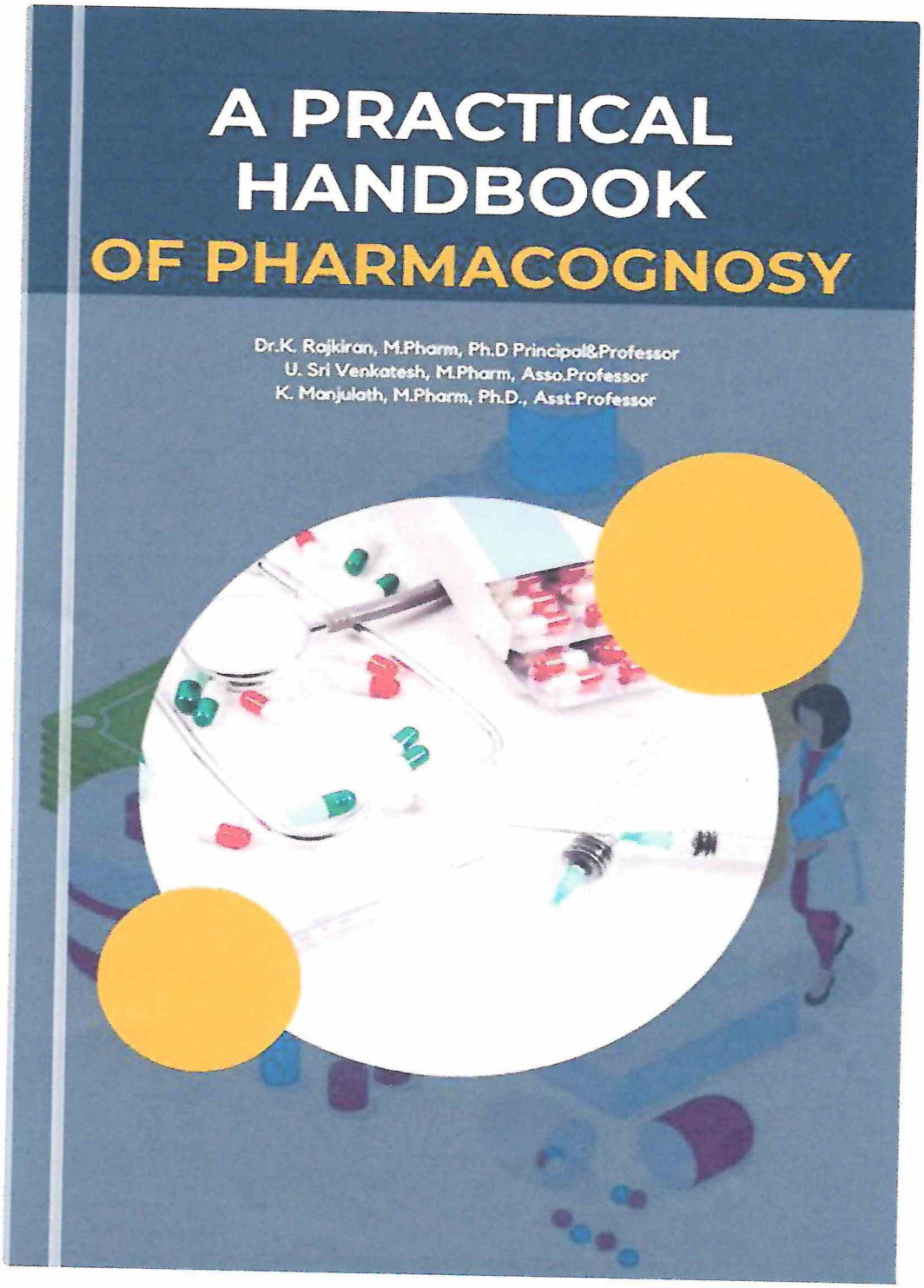

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