NAAC 'A++' Grade
UGC Category I Deemed University

pharmahorizon

A panorama in the world of health sciences

NEWSLETTER FROM DEPARTMENT OF PHARMACY, SUMANDEEP VIDYAPEETH DEEMED UNIVERSITY | JUL-DEC 2021 Vol VII Issue 2

Managing Editors View

Dr. Hemraj Singh Rajpu
Associate Professor

It is our pleasure to share 2nd issue of 7th volume of Pharmahorizon. The current issue is presented with two new drugs, first is Cariprazine Hydrochloride indicated for bipolar, major depressive disorder and schizophrenia& second is Tipiracil Hydrochloride indicated for esophagogastric cancer, adenocarcinoma, gastric cancer, metastatic colorectal cancer.

With the advances in the science and technology a development in Artificial intelligence (AI) &the possibility of AI use in medical science cannot be neglected. The possible application and use of Artificial Intelligence in the field of Drug discovery, drug development, &optimizing clinical trials has been discussed in this issue. The Block chain technology is already being used in various industries &now has been applied in pharmaceutical industry. It has shown a great potential, for the same applications &challenges has been discussed in this issue.

Tuberculosis remains one of the biggest challenges at global scale, second to that the therapy is associated with problems such as Anti Koch Therapy (AKT) 3 induced hepatitis. A case has been discussed for AKT3 induced hepatitis. Next a new biomarker named brain-derived tau recently being tested for the detection of Alzheimer's disease and is found to be sensitive in confirmation of the disease.

Drug development in cancer therapy has provided a new drug Tepotinib which is an oral tyrosine kinase inhibitor used in treatment of metastatic non-small cell lung cancer.

World Health Organization has provided recommendation on the use of antiplatelet agents for the prevention of pre-eclampsia the low dose aspirin (75mg per day) is recommended.

Roctavian a first approved gene therapy for hemophilia with a decade of research surprisingly rejected by FDA. Further follow-up studies are required for review of the drug.

Activities performed by our students, staff and Publications are included in this issue. We welcome your suggestions, contributions and feedback at editorpharmahorizon@gmail.com

NEW DRUG APPROVAL

1. Cariprazine hydrochloride bulk and Cariprazine capsules 1.5mg/3mg/4.5mg and 6mg

Indication:

- Bipolar I disorder, Acute mixed or manic episodes: Usual dosage 3 to 6 mg orally once daily. Initial dosage 1.5 mg day one followed by 3 mg daily upto 6mg per day based on clinical response.
- Depressed bipolar I disorder: Initial dosage: 1.5mg orally once daily titrated upto 3 mg once daily based on 15 day clinical response.
- Major Depressive disorder; Adjunct: Initial dosage 1.5mg orally once daily, titrated upto 3mg daily based on 15 day clinical response.
- Schizophrenia: Usual dosage 1.5 to 6 mg. Initial dosage 1.5 mg on day one, may increase to 3 mg daily on day 2 onwards. Further titration based on clinical response upto 6 mg once daily maximum dosage.

Dosage in Renal Failure

- CrCl 30mL/min or Greater: No adjustment Required.
- CrCl less than 30mL/min: Use is not recommended; cariprazine has not been evaluated in this population.

Side effects: Edema, Ischemic Stroke, Orthostatic hypotension, Palpitation, Hyperhidrosis, Dyslipidemia, Hyperglycemia, Weight gain, Constipation, Esophageal dysmotility, Increased appetite, Indigestion, Nausea, Vomiting, Xerostomia, Backache, Myalgia, Akathisia, Dizziness, Extrapyramidal Sign, Headache, Insomnia, Parkinsonism, Somnolence etc.

Contraindications & Caution: History of a hypersensitivity reaction to cariprazine.

Pregnancy: Teratogenicity, Fetal risk cannot be ruled out, Infant risk cannot be ruled out.

Source: 1. List of new drugs approved in the year 2021
https://cdsco.gov.in/opencms/opencms/system/modules/CDSCO.WEB/elements/download_file_division.jsp?num_id=ODAyOA==

2. Tipiracil hydrochloride bulk and FDC of 1) Trifluridine 15mg + Tipiracil 6.14mg and 2) Trifluridine 20mg + Tipiracil 8.19mg

Indication:

- Esophagogastric cancer, Adenocarcinoma, metastatic, previously treated with at least 2 prior lines of chemotherapy that included a fluoropyrimidine, a platinum, either a taxane or irinotecan, and if appropriate, HER2/neu-targeted therapy: Usual dosage 35 mg/m(2) based on trifluridine component orally twice daily with food on days 1 through 5 and days 8 through 12 of each 28-day cycle; round dose to nearest 5 mg. Maximum dose: 80 mg based on trifluridine component.
- Gastric cancer, Metastatic, previously treated with at least 2 prior lines of chemotherapy that included a fluoropyrimidine, a platinum, either a taxane or irinotecan, and if appropriate, HER2/neu-targeted therapy: Usual dosage: 35 mg/m(2) based on trifluridine component orally twice daily with food on days 1 through 5 and days 8 through 12 of each 28-day cycle; round dose to nearest 5 mg. Maximum dose: 80 mg based on trifluridine component.
- Metastatic colorectal cancer, Previously treated with fluoropyrimidine-, oxaliplatin- and irinotecan-based regimens, an anti-VEGF therapy and if RAS wild-type, an anti-EGFR therapy: Usual dosage: 35 mg/m(2) based on trifluridine component orally twice daily with food on days 1 through 5 and days 8 through 12 of each 28-day cycle; round dose to nearest 5 mg. Maximum dose: 80 mg based on trifluridine component.

Dosage in Renal Failure

- CrCl 30mL to 89mL/min or Greater: No adjustment Required.
- CrCl 15mL to 29mL/min: 20 mg/m(2), based upon trifluridine component, orally twice daily with food on days 1 through 5 and 8 through 12 of each 28-day cycle; further reduce dose to 15 mg/m(2) twice daily in patients unable to tolerate 20 mg/m(2); permanently discontinue use if unable to tolerate 15 mg/m(2) twice daily.

Side effects: Alopecia, Abdominal pain, Decrease in appetite, Diarrhea, Nausea, Stomatitis, Taste sense altered, Vomiting, Anemia all grade, Pulmonary embolism, Asthenia, Fatigue, Fever.

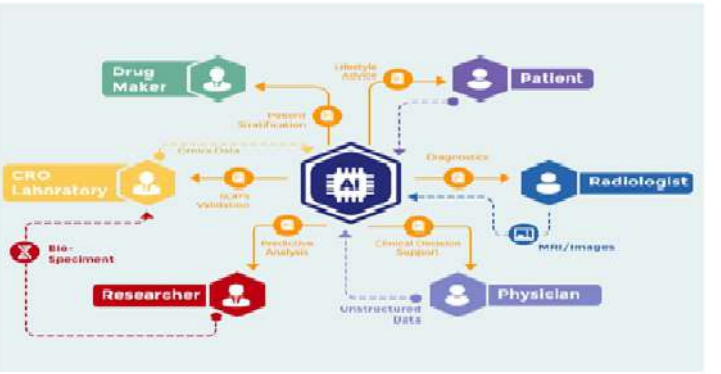
Contraindications & Caution: Specific contraindications have not been determined.

Pregnancy: Fetal risk cannot be ruled out, Infant risk cannot be ruled out.

Source: 1. List of new drugs approved in the year 2021
https://cdsco.gov.in/opencms/opencms/system/modules/CDSCO.WEB/elements/download_file_division.jsp?num_id=ODAyOA==

pharmahorizon
A panorama in the world of health sciences
JUL-DEC 2021 Vol VII Issue 2

ARTIFICIAL INTELLIGENCE



Artificial Intelligence (AI) is increasingly being used in the pharmaceutical industry to improve drug discovery and development, as well as to optimize clinical trials and improve patient outcomes.

One application of AI in drug discovery is virtual screening, which involves using AI algorithms to screen large databases of compounds to identify potential drug candidates. This approach can save time and money compared to traditional drug discovery methods.

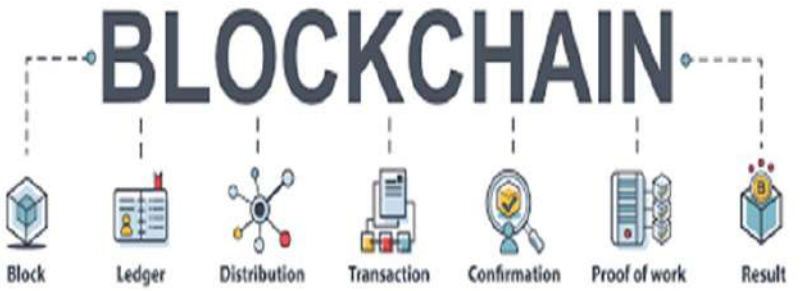
Another application of AI in pharmaceuticals is personalized medicine, which involves using patient data to tailor treatments to individual patients. AI algorithms can help identify patient subgroups that may respond better to certain treatments, and can also help predict patient outcomes based on their genetic and other health-related data.

AI can also be used to optimize clinical trials by identifying the most promising patient populations to enroll in, predicting patient outcomes, and monitoring patient safety. This can help streamline the drug development process and reduce costs.

AI has the potential to revolutionize drug discovery and development, leading to more effective and personalized treatments for patients. However, there are also challenges associated with implementing AI in the pharmaceutical industry, such as regulatory hurdles and the need for large amounts of high-quality data.

Reference: https://builtin.com/artificial-intelligence

BLOCK CHAIN TECHNOLOGY



• Blockchain technology is being explored as a way to improve transparency and efficiency in the pharmaceutical industry.

• One potential application of blockchain in pharmacy is in the supply chain, where it can help to track the movement of drugs from manufacturer to patient, ensuring that they are authentic and have not been tampered with. By creating an immutable ledger of transactions, blockchain can provide transparency and accountability in the supply chain, reducing the risk of counterfeit drugs and improving patient safety.

• Another application of blockchain in pharmacy is in clinical trials, where it can be used to securely store and share patient data among researchers and institutions, while also maintaining patient privacy. This can help streamline the clinical trial process and accelerate drug development.

• Blockchain can also be used to incentivize patients to participate in clinical trials, by offering rewards or tokens for their participation. This can help address the issue of patient recruitment, which is often a bottleneck in the drug development process.

• Blockchain technology has the potential to improve transparency, efficiency, and patient safety in the pharmaceutical industry. However, there are also challenges associated with implementing blockchain, such as the need for standardization and interoperability, as well as regulatory and legal hurdles.

Reference: Zakari N, Al-Razgan M. et.al. Blockchain technology in the pharmaceutical industry: a systematic review. PeerJ Comput Sci. 2022 Mar 11;8:e840.

Anti Koch Therapy (AKT) 3 Induced Hepatitis: A Case Report

As tuberculosis is a global health problem. Non-adherence related to treatment regimen and inappropriate prescription of tuberculosis therapy may be one of the major contributing factors in public health. Hepatotoxicity is leading adverse effect of first line anti tuberculosis medication. They do not cause hepatotoxicity in all patients but there are many reported cases which showed hepatotoxicity due to anti tuberculosis drugs. This adverse effect occurs due to individual drug metabolize by alternative pathways. Tuberculosis is caused by M. tuberculosis. Tuberculosis has recently resurged as a dangerous threat to worldwide public health because of the growing prevalence of drug-resistant mycobacterium tuberculosis strains and the increasing number of patients with acquired immunodeficiency syndrome. Major side effect of antituberculosis treatment is skin rash with or without itching, deafness, dizziness, jaundice, hepatitis, confusion, visual impairment, shock, purpura, acute renal failure and decrease urine output.

Case description: A 24-year-old female came to respiratory department with complains of dry cough and generalized weakness since one month, pedal edema for three days, breathlessness, chest pain and weight loss. She was known case of systemic lupus erythematosus with vitamin B12 deficiency with Hypothyroidism. She had recurrent tuberculosis in the last 15 days and for that she was put on isoniazid, rifampicin, ethambutol, pyrazinamide combination (HRZE regimen). Her laboratory reports suggest she developed hepatitis for which antituberculosis drugs were suspected. She was put on alternative regimen (streptomycin, levofloxacin, ethambutol and ethambutol). After stopping potent hepatotoxic medication, she started reliving symptoms of hepatitis. The early diagnosis of reaction and close monitoring of patient prevented the seriousness of reaction in this case.

Treatment: The currently recommended first-line treatment for tuberculosis is a regimen of isoniazid (INH: 300mg), rifampicin (600mg), pyrazinamide (25-35 mg/kg) and ethambutol (15- 25 mg/kg) for two months, followed by four months of isoniazid and rifampicin and/or ethambutol and second line agents are streptomycin, para-amino salicylic acid, cyclosporin, ethionamide, clofazimine, quinolones, macrolides/ azalides.2 isoniazid should be taken with on empty stomach and antacids should be avoided within two hrs of isoniazid.

Conclusion: Generally, 1st-line agents of Antituberculosis drugs are potent hepatotoxic. But proper monitoring and early detection of reaction can help in decreasing the severity of reaction. After reaction relieved medication should give according to risk- benefit ratio of medication.

REFERENCES: Sajan C, Shah PR, Mistry M. AKT 3 Induced Hepatitis: Case Report. Indian Journal of Pharmacy Practice. 2021;14(4).

New Biomarker Test To Detect Alzheimer's Neurodegeneration in Blood

The biomarker, called "brain-derived tau," or BD-tau, outperforms current blood diagnostic tests used to detect Alzheimer's-related neurodegeneration clinically. It is specific to Alzheimer's disease and correlates well with Alzheimer's neurodegeneration biomarkers in the cerebrospinal fluid (CSF). At present, diagnosing Alzheimer's disease requires neuroimaging. Those tests are expensive and take a long time to schedule, and a lot of patients, even in the U.S., don't have access to MRI and PET scanners. Accessibility is a major issue. Currently, to diagnose Alzheimer's disease, clinicians use guidelines set in 2011 by the National Institute on Aging and the Alzheimer's Association. The guidelines, called the AT(N) Framework, require detection of three distinct components of Alzheimer's pathology — the presence of amyloid plaques, tau tangles and neurodegeneration in the brain — either by imaging or by analysing CSF samples. Unfortunately, both approaches suffer from economical and practical limitations, dictating the need for development of convenient and reliable AT(N) biomarkers in blood samples, collection of which is minimally invasive and requires fewer resources. The development of simple tools detecting signs of Alzheimer's in the blood without compromising on quality is an important step toward improved accessibility.

The most important utility of blood biomarkers is to make people's lives better and to improve clinical confidence and risk prediction in Alzheimer's disease diagnosis. Current blood diagnostic methods can accurately detect abnormalities in plasma amyloid beta and the phosphorylated form of tau, hitting two of the three necessary checkmarks to confidently diagnose Alzheimer's. But the biggest hurdle in applying the AT(N) Framework to blood samples lies in the difficulty of detecting markers of neurodegeneration that are specific to the brain and aren't influenced by potentially misleading contaminants produced elsewhere in the body. The tests showed that levels of BD-tau detected in blood samples of Alzheimer's disease patients using the new assay matched with levels of tau in the CSF and reliably distinguished Alzheimer's from other neurodegenerative diseases.

Scientists hope that monitoring blood levels of BD-tau could improve clinical trial design and facilitate screening and enrollment of patients from populations that historically haven't been included in research cohorts.

Source: https://www.upmc.com/media/news/122722-alzheimers-neurodegeneration

pharmahorizon
A panorama in the world of health sciences
JUL-DEC 2021 Vol VII Issue 2

"Lytgobi(Futibatinib): A Unique Targeted Therapy for intrahepatic cholangiocarcinoma "

Pharmacology:

• Futibatinib is a kinase inhibitor used to treat intrahepatic cholangiocarcinoma in previously treated adults. Pharmacokinetics and

pharmacodynamics:

• Futibatinib is an anticancer agent with demonstrated anti-tumour activity in mouse and rat xenograft models of human tumours with activating FGFR genetic alterations. Futibatinib is not expected to affect cell lines with no FGFR genomic aberrations.2 It suppresses the growth of tumours in a dose-dependent manner.

• Tmax ranges from 1.2 to 22.8 hours, with a median value of two hours. In healthy subjects, a high-fat and high-calorie meal (900 to 1000 calories with approximately 50% of total caloric content from fat) decreased futibatinib AUC by 11% and Cmax by 42%. The geometric mean (CV%) apparent volume of distribution (Vc/F) is 66 L (18%). n vitro, futibatinib is primarily metabolized by CYP3A and to a lesser extent by CYP2C9 and CYP2D6. Unchanged futibatinib is the major drug-related moiety in plasma (accounting for 59% of radioactivity) in healthy subjects. The mean (CV%) elimination half-life (t1/2) of futibatinib is 2.9 hours (27%).

Mechanism of action:

• Fibroblast Growth Factor receptor (FGFR) pathway play a key role in cell proliferation, differentiation, migration, and survival. Notably, FGFR genomic aberrations and aberrant FGFR signalling pathways are observed in some cancers,1,2 as constitutive FGFR signalling can support the proliferation and survival of malignant cells.4

• Futibatinib is a selective, irreversible inhibitor of FGFR 1, 2, 3, and 4 with IC50 values of less than 4 nM.2,4 It binds to the FGFR kinase domain by forming a covalent bond with cysteine in the ATP-binding pocket.2 Upon binding to FGFR, futibatinib blocks FGFR phosphorylation and downstream signalling pathways,4 such as the RAS-dependent mitogen-activated protein kinase (MAPK), phosphatidylinositol 3-kinase (PI3KCA)/Akt/mTOR, phospholipase Cγ (PLCγ), and JAK/STAT.3 Futibatinib ultimately decreases cell viability in cancer cell lines with FGFR alterations, including FGFR fusions or rearrangements, amplifications, and mutations.

• Spectrum of Activity:

• For Unresectable intrahepatic Cholangiocarcinoma , Metastatic intrahepatic Cholangiocarcinoma

Drug interactions:

• The metabolism of Futibatinib can be decreased when combined with Amiodarone. The metabolism of Futibatinib can be decreased when combined with Antiviral drugs.It must be Take at the same time every day.

• Take with or without food. A high-fat and high-calorie meal decreases drug exposure, but not to a clinically significant extent.

Conclusion:

• Futibatinib is a promising drug candidate for the treatment of advanced solid tumors with NRG1 fusions. It has shown promising results in early-phase clinical trials and has the potential to become a new targeted therapy option for cancer patients with NRG1 fusion-positive tumors. However, further studies are needed to evaluate its safety and efficacy in larger patient populations and to identify the optimal dosing and treatment schedule. Overall, futibatinib represents an exciting development in the field of cancer treatment and has the potential to improve outcomes for patients with this specific type of cancer.

Reference:

https://go.drugbank.com/drugs/DB15149
https://www.fda.gov/drugs/resources-information-approved-drugs/fda-grants-accelerated-approval-futibatinib-cholangiocarcinoma

WHO recommendations on antiplatelet agents for the prevention of pre-eclampsia (6 December 2021)

1. Low-dose acetylsalicylic acid (aspirin, 75 mg per day) is recommended for the prevention of pre-eclampsia in women at moderate or high risk of developing the condition. (Recommended)

- Evidence from the systematic review supports the use of aspirin in all at-risk groups (low, moderate and high). However, the GDG noted that a much larger number of women at low risk of developing pre-eclampsia would need to be treated to prevent one case of pre-eclampsia compared with women at moderate or high risk. Based on the risk-benefit assessment of the use of aspirin among women at low risk of pre-eclampsia, additional resource constraints on a health system, and the impact on equity, the GDG recommends restricting treatment to only women at moderate or high risk of pre-eclampsia.
- For the purpose of this recommendation, women are regarded as being at moderate risk of developing pre-eclampsia if they have any two of the following risk factors: primiparity, family history of pre-eclampsia, age greater than 40 years, or multiple pregnancies; and a high risk of developing pre-eclampsia if they have one or more of the following risk factors: diabetes, chronic or gestational hypertension, renal disease, autoimmune disease, positive uterine artery Doppler, previous history of pre-eclampsia, or previous fetal or neonatal death associated with pre-eclampsia. This is not an exhaustive list of factors for moderate- or high-risk stratification for pre-eclampsia and can be adapted or complemented based on the local epidemiology of pre-eclampsia.
- The GDG acknowledged that in settings where 75 mg aspirin tablets are not available, the dose nearest to 75 mg that is available should be used.
- Although there is evidence to suggest that a daily dose of aspirin of 75 mg and above (up to 150 mg) may be more beneficial compared to an aspirin dose less than 75 mg in terms of reduction of pre-eclampsia, the GDG was concerned about the potential for increased risk of postpartum haemorrhage and the plausibility that the risk could be increased with higher doses of aspirin. Therefore, the GDG selected 75 mg as the optimal dose in terms of risk-benefit considerations (details described in the Evidence to Decision framework). In making this decision, the GDG acknowledged the lack of evidence on the comparative risk of postpartum haemorrhage among women who received 75 mg compared with those who received 150 mg of aspirin for pre-eclampsia prevention and noted it as a research priority.
- In view of the potential for a small increase in risk for postpartum haemorrhage among women treated with aspirin it is important to counsel women who are eligible for aspirin for the prevention of pre-eclampsia on the potential risks to encourage informed decision-making by the women and their families.
- The GDG emphasized that this recommendation applies to the use of aspirin in women with gestational hypertension as a secondary preventive measure against developing pre-eclampsia.

2. Low-dose acetylsalicylic acid (aspirin, 75 mg per day) for the prevention of pre-eclampsia and its related complications should be initiated by 20 weeks gestation or as soon as antenatal care is started.

- • Irrespective of when treatment is initiated, appropriate counselling on the risks and benefits of preventative treatment is paramount - both to improve adherence and to inform the woman of warning signs that should be reported (such as bleeding or abdominal pain).
- There is scant evidence on the optimal time to discontinue aspirin treatment for the prevention of pre-eclampsia. In addition, the GDG is aware that, in some settings, the use of aspirin around the time of birth may preclude the use of epidural or spinal anesthesia at the time of delivery. The GDG suggests that aspirin should be discontinued in line with local practice on the use of anticoagulants in pregnancy. The GDG notes the need for research in this area to clarify the benefits of prevention of pre-eclampsia with the potential risks of postpartum and neuroaxial hemorrhage with the use of low-dose aspirin late in pregnancy.

Source: https://www.who.int/publications/who-guidelines#

DRUG IN CLINICAL TRIAL

Roctavian

Company: Biomarin Pharmaceutical

Disease: Hemophilia A

Treatment type: Gene Therapy

Trial: NCT03370913

Roctavian seemed set to become the first approved gene therapy for haemophilia, the culmination of decades of research into a one-time treatment for chronic blood disease. But the FDA in August surprisingly rejected Roctavian in one of the most stunning regulatory decisions in recent memory. Regulators didn't turn back Roctavian because the therapy doesn't work. Instead, they flagged differences in results between the two Roctavian studies. The treatment's effects appeared weaker in an initial group of participants enrolled in BioMarin's Phase 3 trial than it did in earlier testing and waned over time. Meanwhile, BioMarin withdrew its application in the EU after the European Medicines Agency requested more information. Roctavian's path back to an FDA review, however, is longer. The FDA required two years of follow-up, information BioMarin likely won't have until November.

Both agencies want to see more data, which is what makes BioMarin's coming update important. The company is expected to report one year of follow-up data from its Phase 3 study in January. Should Roctavian's positive effects hold up, BioMarin could resubmit an approval application in Europe in the second quarter.

Source: https://www.biopharmadive.com/news/biotech-10-clinical-trials-watch-2021-first-half/593069/

pharmahorizon
A panorama in the world of health sciences
JUL-DEC 2021 Vol VII Issue 2

Community Awareness Camp for Diabetes & Hypertension

A Camp was organized to spread awareness among common people regarding general body check up which includes BMI, Blood Pressure, Blood Sugar measurement, Patient Counselling and general awareness for leading a healthy and peaceful life. Students communicated to the villagers in local language (Gujarati) for their better understanding.

World Children's Day

Department of Pharmacy, Sumandeep Vidyapeeth organized health awareness activity on basic health awareness regarding child health, hygiene, malnutrition, immunization schedule at village 'Banaj' on the occasion of Children's Day-2021. Day was celebrated to spread awareness among children regarding child health, hygiene, malnutrition and immunization schedule. Students and staff also distributed the recreational kit to the children and provided them lunch and refreshment.

World Pharmacist Day

Department of Pharmacy, Sumandeep Vidyapeeth organized health awareness rally and basic health awareness program at village 'Piparia' on the occasion of World Pharmacist Day-2021. Students explained to villagers about life style modification, disease complications, diet chart, drug-drug interaction etc. They also discussed about rational use of medicine and spread awareness about side effects of different kind of drugs and basic health awareness.

World Heart Day

On the occasion of World Heart Day, Sumandeep Vidyapeeth's Department of Pharmacy held a healthy heart awareness rally and a basic heart health awareness program in the village of 'Banaj.' Students and faculty from the Department of Pharmacy participated in these activities. Students created posters and leaflets to raise general knowledge about heart health. They also explained lifestyle modifications to be followed during corona pandemic, heart disease complications, diet chart, and how to live a healthy life, among other things. In addition, they educated the community on basic health issues.

WORLD AIDS DAY

Worlds AIDS Day was celebrated on 1st December, 2021 by Department of Pharmacy, SVDU. The students from Department of Pharmacy had prepared posters and pamphlets subjecting to general health awareness for the AIDS, precaution, Awareness and Symptoms. They explained about AIDS and its symptoms, precaution regular health check up, blood transfusion, its spreading. They percolated information about basic health awareness to Villagers.

Publications

1. Sajan C, Shah PR, Rajput HS, Karn A, Modi B. Aspirin-induced Leukocytoclastic Vasculitis: Case Report. Journal of Young Pharmacist. 2022;14(2):258-260.
2. Maheshwari RA, Khemani D, Sen AK, Balaraman R, Velmurugan R, Sen DB. Protective Effects of Silymarin and/or Omega-3 Fatty Acids against Paracetamol-initiated Liver Toxicity in Rats. Indian Journal of Pharmaceutical Education and Research. 2022;56(1):S81-8.
3. Gohil D, Shah N, Maheshwari RA. Effect of Formulation Variables on Fabrication of Risperidone Loaded Nanoparticles for Sustained Drug Delivery. Indian Journal of Pharmaceutical Education and Research. 2022;56:58-64.
4. Das SK, Maheshwari RA. Direct Intercession Approach by Clinical Pharmacist to Manage Medication Related Problems for Enhanced Patient Care. Journal of Young Pharmacists. 2022;14(1):110-117.
5. Parmar G, Shah A, Shah S, Seth AK. Identification of bioactive phytoconstituents from the plant Euphorbia hirta as potential inhibitor of SARS-CoV-2: an in-silico approach. Biointerface Research in Applied Chemistry. 2022;12:1385-96.
6. Gandhi K, Shah U, Patel S, Patel M, Patel S, Patel A, Patel S, Solanki N, Shah A, Baria D. Molecular modeling and ADMET predictions of flavonoids as prospective aromatase inhibitors. Indian Journal of Chemistry (IJC). 2022;61(2):192-200.
7. Panchal NB. Quinazoline heterocycle and its anti-cancer activity: an overview. International Journal of Pharmaceutical Sciences and Research. 2022;13(3):1065-1078.
8. Lalani A, Sheth H, Chudasama H, Sajan C. Sunitinib induced fixed drug eruption. Journal of medical pharmaceutical and allied sciences. 2022;11(1):4417-4418.
9. Shah A, Patel C, Parmar G, Patel A, Jain M. A Concise Review on Tyrosine Kinase Targeted Cancer Therapy. Current Drug Therapy. 2022;17(2):96-107.
10. Hadia R, Bhavsar K, Patel R, Shivadas V, Gohel K, Gaikwad R, Rajput H. A Prospective Observational Study to Find out the Characteristics of Postpartum Depression (PPD) and to Assess the Impact of Pharmacist Led Counselling among the Females with PPD. Journal of Young Pharmacists. 2022;14(2):214-220.
11. Mehta SP, Balaraman R. A Review on Herbal Remedies for Alzheimer's Disease. Journal of Natural Remedies. 2022;19:123-35.
12. Sen DB. Simultaneous Assessment of Alogliptin Benzoate and Metformin Hydrochloride in Tablet Dosage Form by Reversed-phase High-performance Liquid Chromatography. Asian Journal of Pharmaceutics. 2022;16(2):196-202.
13. Zanwar AS. Quantitative Assessment of Luliconazole and Gallic Acid Simultaneously in Formulated Emulgel by UV Spectrophotometric Methods. Asian Journal of Pharmaceutics (AJP). 2022;16(2):189-195.
14. Manjunath PN, Seth AK, Anand KR, Satish CS. Designing the formulations in circadian rhythm activity with chronotherapeutic drug delivery system using ramelteon. IJHS. 2022;6:2599-609.
15. Sajan C, Soni P, Suratiya N, Shah K. A case Report of Sub -Arachnoid Hemorrhage. Journal of Young Pharmacists. 2022;14(2):263-265.

Awards / Recognition / Achievements

1. Dr. Nirmal Shah has been acknowledged for giving valuable contribution as Poster Presentation Evaluator in two days International e- Seminar on Cosmeceuticals –The new face of Health and Personal Care Organized by Ramanbhai Patel College of Pharmacy, CHARUSAT during 21st and 22nd January, 2022.
2. Mr. Shivkant Patel has been awarded excellence in reviewing articles in Journal of Advances in Medicine and Medical Research
3. Mr. Shivkant Patel has been awarded excellence in reviewing articles in Journal of Pharmaceutical Research International.
4. Mr. Shivkant Patel has been awarded excellence in reviewing articles in South Asian Journal of Research in Microbiology.
5. Dr. Dhanya B.Sen has been awarded excellence in reviewing articles in Indian Journal of Pharmaceutical Education and Research.
6. Mr. Piyushkumar Sadhu has been awarded excellence in reviewing article entitled " The Covid 19 vaccine patent race" in Quies.