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A Study on Anticancer Drugs Development- Pharmacists role

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ABSTRACT: Our present work, a study of anticancer drugs focuses on knowing the cause of rising various types of cancer sufferings in India and current availed marketed drugs for treatment along with the Pharmaceutical formulation related issues and the adverse effects faced by the patients. Cancers are treated based on their stages and apt treatment planned by the medical practitioner to the patient. Inspite of the advanced treatments with technology available still patient quality of life improvement are a concern to the Pharmacist. Starting from the Drug development to the alleviating the Patient disease, Pharmacist role from Research, clinical and Patient counsellor we learn the Challenges faced and their journey of overcoming them from identification to solving them with the medical team is discussed in this paper.

KEYWORDS: Pharmacist, Anticancer drugs, Quality of life, Pharmaceutical Formulations.

I. INTRODUCTION

Cancers are rising in India at an alarming rate with Breast cancer type in women and lung cancer in males,reaching out hospitals where they are diagnosed with advanced stage leaving slim chances of survival of patient. The medications available to the patients comes with enduring by compromising their quality of life. Patient survival greatly affecting his fortune and family.

Speaking about the types of the cancers as Acute lymphoblastic leukemia, acute myeloid leukemia, adrenocortical carcinoma, anal, astrocytomas, atypical teratoid affecting children, complicated cancers associated with AIDS affecting lymphoma are Kaposi sarcoma & Central nervous system, brain, bone, bladder, bile duct, basal cell carcinoma, breast, bronchial, Burkitt lymphoma, medulla blastoma, cervical, craniopharyngioma, cutaneous T-cell lymphoma, ductal, diffuse intrinsic pontine glioma, embryonal, endometrial, ependymoma, extragonadal germ cell, ewing, esthesio-neuroblastoma, retinoblastoma, intraocular, fallopian tube, gall bladder, gastric related neuro-endocrine, intestinal stromal, gestational trophoblastic, ovarian, testicular, heart, head & neck, histiocytosis, hepatocellular, laryngeal, oral, lip, liver, merkel cell, mesothelioma, metastatic, paranasal sinus, non-small cell lung, penile, pheochromocytoma, pituitary, thyroid, throat, rectal, rhabdomyosarcoma, salivary gland, vaginal,vascular, wilms, and their available treatment plan are Chemotherapy, Hormone therapy, Photodynamic therapy, Hyperthermia, Immunotherapy, Radiation therapy, Blood stem cell therapy, Surgery, Targeted therapy[1].

The reasons of cancers rise related to sedentary lifestyle, tobacco & alcohol excessive intake, imbalanced diet intakes, family where the mitigation steps lie in the very rectifying the reasons followed by regular health checkups which timely saves from deteriorating the situation which can be controlled with carefully sticking to the planned treatment discussing with the medical team and followed up the clinical Pharmacists.

Here the awareness among the patients regarding the available treatments and regular diagnosis for keeping the condition (cancer) on check helps patient indeed by reducing their Hospital stay and family burden of managing finances & health.

The patients taking on anticancer drugs reported several adverse effects such as

1. Decreased red blood cell count (anaemia).

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2. Hairfall.
3. Sleep deprivation
4. Gastric disturbances (nausea & vomiting, diarrhea, boating, constipation,) affecting their food intake.
5. Fertility issues.
6. Enduring severe pain.
7. Abnormal changes observed in skin & nails.
8. Bruises & bleeding.
9. Fatigue, delirium.
10. Neutropenia.
11. Vulnerability to infections.
12. Organ related inflammation.
13. Radiation issues related to progressive exposure to diagnosis & therapy.

Now discussing about the various drugs available in market suffers from the adverse effects which can be solved by the preparing advanced Pharmaceutical formulations of the existing ones by applying the formulation strategies such as solubility enhancement, controlled release, nano-pharmaceuticals (liposomes, nanoparticles, microspheres) where advanced research studies are evident in the literature briefed in table no.1 as follows.

Table no.1 Latest research studies on anticancer drug development

s.no	Research	Reference
1.	Anticancer drug development from Natural product applying computational methods	[2]
2.	Applying multitarget drugs to deal neurological cancer effectively.	[3]
3.	Developing novel coumarin derived anticancer drugs by structure activity related studies.	[4]
4.	Developing metals (gold, copper and platinum) complexed target anticancer drugs	[5]
5.	Purine and pyrimidine derived anticancer drugs development led to effective treatment.	[6]
6.	Targeting P-glycoproteins as effective strategy to target the cancerous cells.	[7]
7.	Preparation of limonoids (as complex structures) from Azardirachta Indica plant effective against cancers.	[8]
8.	Precision medicines- reactivating p53 target anticancer drug developed.	[9]
9.	Hydrazone linked anticancer drugs developed.	[10]
10.	Computation based research for repurposing drugs for anticancer treatment.	[11]
11.	Developing M2 target macrophages as effective anticancer drugs.	[12]
12.	Development of carbon dots for anticancer treatment.	[13]
13.	20 anticancer drugs developed by applying PROTAC technology by clinical trials.	[14]
14.	Developing Thiazoles scaffolds anticancer drugs.	[15]
15.	Developing environment stimulating anticancer drug with mesoporous silica nanoparticles.	[16]
16.	Developed Trptanthrin derived anticancer drugs unharming to healthy cells.	[17]
17.	Developed Hydrogels -MXenethermorespone controlled release formulations.	[18]
18.	Development of digestive enzymes targeted 1,2,3-triazoles anticancer drugs.	[19]
19.	Fe-derived fluoxiridin intelligent anticancer drug developed.	[20]
20.	Enhancing solubility of gefitinib by supercritical CO_2.	[21]
21.	Investigating anticancer drugs molecular drug structure, topological by molecular docking studies.	[22]
22.	Enhancing the anticancer drug 5-fluorouracil with banana peel extract.	[23]

Summarizing the researchers innovations their efforts focused on the developing the effective anticancer drugs by understanding the chemical structure of the drugs and modifying them to target only the cancer cells by preparing metal complexes, receptor structural analogues applying computational methods saving experimental time and saving the developmental costs of anticancer

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drugs which eventually leads to production of cost effective drugs that can be afforded by the patients saving them from financial burden and quality of life improved.

II. CONCLUSION

Inthis Where a continuous research on the anticancer drugs for improving the effectiveness of the developed anticancer drugs is a challenge, leaving many futuristic opportunities for the researchers, work on ground breaking technologies, and a hope for the survival rate of patients.

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