**Anticancer Drugs used in Treatment of Curing Cancer**

Prasanthi D*

Avanti Institute of Pharmaceutical Sciences, Vizianagaram, Andhra Pradesh

**ABSTRACT**

Anticancer drugs are defined as drugs which are used for treating of cancer. Cancer can be diagnosed by different methods. Cancer can be cured by anticancer drugs like bone marrow depressants, lymphocytopenia, GIT stomatitis. Anticancer drugs are also known as antineoplastic drugs which are used not only in the form of oral medicine, they can also be given in different forms like immunotherapy, radiotherapy for treatment of tumors and metastatic cancer. Cancer can be cured by different ways they are as follows ayurvedic medicine, homeopathy medicine. Anticancer drugs travel in body and destroys cancer cells and prevents side effects of tumors.

**INTRODUCTION**

Cancer is defined as proliferation of unwanted material in the body, which leads to accumulation [1] of blood and causes impurity in blood circulation [2]. Tumors are grown in different parts of the body, which leads to death of the patient. Cancer [3] is a slow poison it enters slowly and destroys each and every system in the body. It destroys GIT (Gastro Intestinal Tract), Respiratory [4] system, Circulatory system, excretory [5] system. Nowadays, out of 90 people 70 people are victims of cancer. Mainly females are effected by cancer like breast cancer [6], colon cancer, rectal cancer, uterus cancer, etc.

The living body is made up of cells [7] that develop, proliferate and undergo apoptosis [8] in a systematic manner. In certain cases, unusual behavior [9] of cell is observed, which is termed as neoplasm [10]. Neoplasm or neoplastic refers to the rapid, uncontrolled and abnormal [11] growth of cells or tissues in the body. Neoplastic tumor can be benign or malignant [12]. Benign neoplasm neither grows vigorously nor invades the surrounding body tissues. Thus, benign neoplasm is less fatal, though can kill a person depending on its size. On the other hand, malignant neoplasm has the property of invasion and metastasis [13]. Malignant neoplasms are precisely cancerous.

**MATERIALS AND METHODS**

There are 4 types of anticancer drugs.

A. Alkylating agents
B. Antimetabolites
C. Natural Products
D. Miscellaneous drugs
Alkylating Agents

Alkylating agent is defined as a substance \(^[14]\) used in cancer treatment that attaches an alkyl \(^[15]\) group to DNA. DNA contains Adenine, Guanine, Methanine, The alkyl group is attached to the guanine \(^[16]\) base of DNA, at the number 7 nitrogen atom of the purine ring. Examples of alkylating antineoplastic \(^{[17]}\) drugs are: Nitrogen mustards, Nitrosoureas, Alkylsulfonates, Ethyleneimines, Triazene, Methyl Hydrazines.

Antimetabolites

Antimetabolite is defined as drug or other substance that is an antagonist \(^{[18]}\) interferes with its function in the body, usually by competing for its receptors \(^{[19]}\) or enzymes. Among the antimetabolites used as antineoplastic agents are the folic acid \(^{[20]}\) analog methotrexate and the pyrimidine \(^{[21]}\) analog fluorouracil. The antineoplastic mercaptopurine, an analog \(^{[22]}\) of the nucleotide adenine and the purine \(^{[23]}\) base hypoxanthine, is a metabolic antagonist of both compounds. Thioguanine \(^{[24]}\) another member of a large series of purine analogs, interferes with nucleic acid \(^{[25]}\) synthesis. Cytarabine, used in the treatment of acute myelocytic. Leukemia \(^{[26]}\) is a synthetic nucleoside that resembles cysteine and kills cells that actively synthesize deoxyribonucleic acid (DNA), apparently by inhibiting the enzyme DNA polymerase \(^{[27]}\). Examples: Methotrexate, Purine antagonists, 5-Fluorouracil and Cytarabibe.

Natural Products

Two types of natural products are used for treatment of cancer they are plant products and microorganism \(^{[28]}\) product. Plant-derived compounds have played an important role in the development of several clinically useful anti-cancer \(^{[29]}\) agents. These include vinblastine, vincristine, \(^{[30]}\) the camptothecin derivatives, topotecan \(^{[31]}\) and irinotecan, etoposide, \(^{[32]}\) derived from epipodophyllotoxin, and paclitaxel \(^{[33]}\) (taxol). Several promising new agents are in clinical development based on selective activity against cancer-related molecular \(^{[34]}\) targets, including flavopiridol \(^{[35]}\) and combretast in A4 phosphate. Examples of plant derived products: Vinca alkaloids \(^{[37]}\) (Vincristine, Vinblastin), Taxanes (Paclitaxel, Docetaxel) \(^{[38]}\), Epipodophyllotoxins (Etopeoside) \(^{[39]}\). Microorganisms are antibiotics \(^{[40]}\) and enzymes \(^{[41]}\).

Miscellaneous Drugs

Miscellaneous drugs \(^{[42]}\) are those drugs which are utilised for curing cancer. Examples are hydroxyurea , Rituximab, Leucovorin, Pamidronate, Gemcitabine, Zoledronic acid, Bortezomib, etc.\(^{[43-49]}\).

METHODS FOR CANCER TREATMENT

There are different methods for treatment of cancer

A. Biopsy
B. Endoscopy
C. Diagnostic Imaging
D. Blood Tests
E. Barium enema
F. Barium swallow or X-ray
G. Bone marrow Aspiration
H. Bone scan
I.

Biopsy

A biopsy is the removal of a sample of tissue \(^{[50]}\) or cells so that they can be examined by a pathologist \(^{[51]}\), usually under a microscope \(^{[52]}\). When a whole lump or targeted \(^{[53]}\) area is removed surgically, it is called an Excisional biopsy \(^{[54]}\) When just a sample of tissue is removed, the procedure is called an Incisional biopsy \(^{[55]}\).

Endoscopy

Endoscopy is defined as a method which is used to examine interior of hollow \(^{[56]}\) organ or cavity of the body. Endoscopy is examined mostly for oesophagus, stomach and intestine \(^{[58]}\). It is often less preferred by physicians.
Diagnostic Imaging

Diagnostic imaging is defined as a method used to diagnose cancer or tumor in the body organs. This method describes about capturing of images by combining multiple imaging technologies such as mammography. Computerized tomography is defined as method describes the contrast to enhance the image quality.

Blood Tests

Some tumors release substances called tumor markers, which can be detected in the blood. A blood test for prostate cancer, for example, determines the amount of prostate specific antigen (PSA). High PSA levels can indicate cancer. Tumor converts pure blood into impure blood which effects circulatory system.

Barium Enema

Barium enema is a lower gastrointestinal (GI) examination. An X-ray is taken of large intestine (colon and rectum), and a contrast material containing barium is inserted into anus, which results an clear image in X-ray.

Bone Marrow Aspiration

Bone marrow aspiration is defined as a process or method which describes the removal of small amount of bone marrow fluid. The fluid is then injected to bone through a needle.

Bone Scan

It is defined as a method which describes about a nuclear test that identifies and locates new areas of bone growth or breakdown. Cancer effects bone in the body which results in the formation of tumors or proliferation of bone growth. Bone scan is mostly preferred by physician, it is a quick and rapid process.

DOSAGE FORMS

Anticancer drugs are administrated into body by different dosage forms. Drugs can be administrated through 3 methods, there are as follows
- Injections
- Tablets
- Capsules

Injections

Injection is defined as a fluid is administrated forcibly into the body which cures or prevents the growth of tumor or any proliferated part in the body. They are administrated through intramuscular, intravenous. Examples of injections are Cyclophosphamide Injection, Methotrexate Injection, Fluorouracil Injection, Cisplatin Injection, Carboplatin Injection, Paclitaxel Injection, Etoposide Injection, Oxaliplatin Injection, Octreotide Injection.

Tablets

Tablets are defined as a solid dosage form which are administrated through oral cavity like mucosal cavity and buccal cavity. Tablets show most rapid and quick response. Examples of tablets are Tamoxifen Citrate tablets, Methotrexate tablets, Bicalutamide tablets, Anastrozole tablets, Letrozole tablets, Gefitinib tablets, Flutamide tablets, etc.
Capsules

Capsule is defined as a solid dosage form in which the drug is enclosed in a hard or soft solubie container, usually of a form of gelatine. Capsules [94] are administrated buccal cavity, oral cavity, etc. Examples of capsules are hydroxyurea Capsules, Imatinib Capsules, Temozolomide [95] Capsules, and Etoposide Capsules.

CONCLUSION

I would like to conclude that anticancer or antineoplastic drugs are utilised to cure and prevent cancer. Cancer can be cured by Ayurveda [96] and homeopathy medicine. Natural derivatives play an important role to prevent cancer. Marine floras are the important source of anticancer drugs. Cancer can be cured by natural and synthetic drugs [97]. Cancer is communicable disease which can affect population in a region. Due to global warming, malnutrition [98] and various environmental conditions leads to increase in cancer. Prevention is better than cure cancer should be prevented by giving awareness among people in rural as well as urban areas. Prevention can be done by taking precautionary measures, which will be helpful for decrease count of cancer patients in India. Cancer is a disease which starts slowly and spreads throughout body and it causes many side effects like nausea, vomiting, fatigue, Anemia, lymphedema, etc [99,100].

REFERENCES