Organometallic anticancer agent FY26: a review

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ABSTRACT

Anticancer drugs defined as the drugs used to treat the uncontrolled cells known as cancerous cells. The aim of the anticancer drugs is to eradicate the presence of malignant cells. The anticancer drugs are classified on the bases of their site of action on a point of biosynthesis pathway of important biomolecules. FY-26 is one of extremely potent anticancer drug which shutdown the cancer cells by exploiting weakness inherent in their energy generation. One of the research activity/parameter recorded that anticancer activity of FY-26 is 49 times more potent than that of cisplatin as a research report. FY-26 is the water soluble properties as its physical characteristics. FY-26 is a potent anticancer drug which is the osmium family drug. Mitochondria are the mini-power plants for the cells. The powerhouse of the cell (mitochondria) in cancer cells is mostly defective and as such they cannot produce sufficient energy.

Keywords: FY-26, Ambient, Cisplatin

Introduction

Anticancer drugs are defined as the drugs used to treat the uncontrolled cells known as cancerous cells.

The aim of the anticancer drugs is to eradicate the presence of malignant cells. The anticancer drugs are classified on the bases of their site of action on a point of biosynthesis pathway of important biomolecules.

Ex. Alkylating agents, cytotoxic antibiotics, Antimetabolites, Microtubules inhibitors, and one of the advanced agents are the Osmium compounds.

FY-26 is one of extremely potent anticancer drug which shutdown the cancer cells by exploiting weakness inherent in their energy generation.

One of the research activity/parameter recorded that anticancer activity of FY-26 is 49 times more potent than that of cisplatin. The results were obtained by National Cancer Institute USA in tests conducted on 60 cell lines.

Normally cancer cells use the mitochondria to generate the energy which is necessary to functioning of the cells, these cells contain defective mitochondria that are incapable of sustaining the cells energy requirements.

Cancer cells are able to use their defective mitochondria for metabolic activity in their cytoplasm to generate energy, but the potent drug FY-26 stops their activity of generating
energy, which causes the cancer cells to die.

FY-26 is placed on the top with high potency because the cancer therapy acts as platinum based which used in nearly 50% of all chemotherapeutic regimens and exert their activity by destruction DNA, but the platinum based drugs can't select between cancerous and non-cancerous cells.

This can lead a wide range of side effects and the platinum based treatment often is less effective after their first course, while the osmium compounds having different mechanism of action remains active against cancer cells.

Chemistry

Osmium compounds silver in color have a solid state. Physical characteristics which can be used for the identification of FY-26 are that the appearance as silver color solid powder at room temperature. (20-27°C).

FY-26 is the water soluble properties as its physical characteristics. FY-26 is a potent anticancer drug which is the osmium family drug.

FY-26 acts as shut the cancer cell by the exploiting weakness inherent in their energy generation.

OSMIUM FY-26 COMPOUND

Molecular weight: 190.23 gm/mol
Melting point: 312°C
Boiling point: 530°C
Solubility: FY-26 is the silver color crystalline powder soluble in water.

Chemical properties of fy26

Appearance
The appearance of FY26 is in solid form (powder).

Purity
The purity of FY26 is approximately 98%.

Shipping condition
The shipping of this drug should be carried out under ambient temperature as non-hazardous chemical. This product is stable enough for a few weeks during ordinary shipping and time spent in customs.

Storage condition
Store dry & dark place at temperature 0-4°C for short duration, (i.e. days to weeks) or at -20°C for long duration (months to years).

Solubility
FY26 is mostly soluble in DMSO (dimethylsulfoxide), but is insoluble in water.

Shelf-life
The shelf life of this drug is approximately 20 years, if it is stored properly.

Drug formulation
The drug may be formulated mostly in DMSO.

Stock solution storage
It can be stored at 0-4°C for days to week and -20°C for long term i.e. for months to years.

Pharmacodynamics/mechanism of action

As per a professor from the University’s Department of chemistry reports that Cisplatin has proven to a successful cancer treatment drug, but it does not work as treatment for all types of cancer and other hand it also offers a very toxic treatment, which one can result in many common side effects, and with treatment
time, cells can also become resistant to the primary ingredient of the drug, platinum.

There is great potential in osmium compounds as a cancer treatment drug that is to its unique chemical properties. Another greater advantage of using osmium compound drug (FY-26) very cheaper compared to platinum, meaning is FY-26 cancer treatment drug is going to be affordable for the general public.

Mitochondria are the mini-power plants for the cells. The power house of the cell (mitochondria) in cancer cells is mostly defective and as such they cannot produce sufficient energy. FY26 has registered as significant success in cancer treatment by practical reports by National Cancer Institute USA in tests conducted on 60 cell lines facts that forces the cancer cells to source their energy from mitochondria but the mitochondria in cancer cells are defective and cannot produce energy, because FY-26 shutdown the energy generation by the affected cancer cells, and cancer cells no choice other than to die.

**Clinical phase**
FY-26 is under clinical phase 2 as per HA-IRI report.

**Inventor company**
FY-26 is firstly invented by National Cancer Institute USA.

**Medicinal uses**

**Anticancer**
FY-26 is one of the potent anticancer drug which acts as the shut down the cancer cells by exploiting weakness inherent in their energy generation.

Fatty tissue staining
FY-26 compound is used to the staining the fatty tissue because it enhances the working efficacy of TEM.

**Finger printing detection**
FY-26 is used for finger printing detection which acts as increases detection efficacy for finger printing process.

**Pacemaker and heart valve replacement**
The anticancer agent FY-26 used in heart valve replacement and development of pacemaker.

**Side effects**
FY-26 has some following common side effects.
Renal failure
Neurotoxicity
Ototoxicity
Nausea
Vomiting
Lung congestion
Eye damage

**Conclusions**
FY-26 is a potent drug for the treatment of the cancer disease. As per last 5-6 decay report cancer disease is a major subject for the medical and research in all over world, But new invention of the National Institute of Cancer USA, FY-26 is very useful for treatment of cancer due to its specific Mechanism of action, by the shutdown the energy level generation the affected cancer cell and results to die the cancer cell, So as per proposed investigation we reached at the conclusion that the FY-26 drug may more effective and affordable drug for the treatment of cancer disease.

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