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Nano based drug delivery systems for anticancer therapy: A Review

[1]HAROON RASHID MAGRY [2]. SUHAIL MAJEED WANI [3]. SOHAIL SHAFI [4] FAIZAN MANZOOR KHAN [5]. MEHBOOB JAVID DAR [6].Ms. NAVNEET KAUR

[1,2,3,4,5] UG student,RIMT UNIVERSITY MANDI GOBINDGARH PUNJAB

[6]ASSOCIATE PROFESSOR,RIMT UNIVERSITY MANDI GOBINDGARH PUNJAB

ABSTRACT (SUMMARY) :

Nano drug delivery systems (NDDS) represent a cancer treatment technique that uses nanotechnology to improve and reduce drug delivery. Among the hubs containing “liposomes,” “polymer nanoparticles,” or “dendrimers,” “NDDS” are targeted to the tumor site by “passive” or “active” mechanisms. This "increases the accumulation of the drug in cancer cells" while reducing toxicity. The platform is promising for cancer treatment because it can improve the distribution, effectiveness and behavior of drugs in the body. Cancer is a disease in which cells in some cells "grow out of control" and spread to other parts of the body. The body consists of "trillions" of cells. When they get old or damaged, they die and are replaced by new cells. Cells “spread” and “invade” nearby tissues and can spread to “distant” parts of the body, forming “new cancer” (a process called “metastasis”). "Cancerous" tumors are also called "metastatic" tumors.

Introduction:

Cancer is a disease in which some cells in the body grow out of control and spread to other parts of the body. and regenerates (through a process called cell division) to create new cells that the body needs. To form a tumor, these cells are cancer cells. forms new tumors (a process called "metastasis"). Lymph nodes usually do not form.

Types of Nanocarriers in Cancer Treatment

Of course, the most common nanocarriers used in cancer treatment are given with the following information:

1. 1 liposomes: "Administration" "capsules" as "vesicles" "for encapsulation". 'Plastids' 'formulas' have been 'extensively' researched to 'target', 'carry' 'general' 'cancer' 'treatment'. (2)
2. poly(lactic-glycolic acid or polyethylene glycol)) polymer nanoparticles can control drug release and improve tumor targeting (3) 3. Dendrimers: highly branched macromolecules with specific structures used for drug delivery “cancer” treatment packages alter the solubility and bioavailability of hydrophobic molecules .

Advantages of nanoparticles in cancer treatment

1. Improved targeting: The ability of nanosized drug carriers to reduce toxicity by targeting specific tumors (6).
2. circulation time, “improving” bioavailability, and “improving” the half-life of the drug, thus leading to “good” “treatment” and “improvement” (7). Delivery: Nanoparticles penetrate the tissues of the cell, allowing intracellular drug delivery and improving the treatment of cancer cells (8).
3. "Performs 'personalization' of medicine - 'Application' 'system' 'optimizes' treatment 'plan' according to 'personal' 'patient' characteristics (10)
4. 'Non-invasive' imaging: 'Some 'nanomaterials' 7. Biocompatibility and safety: Many nanocarriers are biocompatible and transparent. They are designed to degrade into non-toxic byproducts (12), reducing the adverse effects of the "deep tube system", "penetration", "more", "drug" and "distribution" (13)

Clinical application of NDDS in cancer treatment: -

NDDS has revolutionized cancer treatment by providing "release", "control" release and "improved" cancer prevention. > 1. Drug type: nanocarriers such as liposomes, polymer nanoparticles and micelles. Doxil" (liposome "doxorubicin") and "Abraxane" (snake-paclitaxel). (19)

2. Gene therapy: Nanoparticles "selectively inhibit" small interfering RNA, which is a therapeutic generator for cancer cells (siRNA) can deliver oncogenes that promote tumor growth and cell death and improve outcomes in “normal” treatment. Treatment: NDDS may be more effective to provide patients with immune response, such as cytokines, checkpoint inhibitors, and drugs directed to the tumor microenvironment to improve the immune system.

NDDS Justice and Governance Decisions on Cancer Care: -

Of course! Importantly, these technologies involve the use of nanoscale materials that will present “unknown” risks to human health and the environment. "long-term" or "unprecedented" toxicities: "Efforts should be made to be fair to nanoparticles. Medicines and treatments have good properties and standards designed to ensure uniformity in drug delivery systems, production and quality control, especially with regard to healthcare potential and affordability." nanodrug delivery systems, including “pharmacokinetics” and “therapeutic efficacy.”

Nanodrug delivery method:

Researchers have developed a nanodrug delivery system using biocompatible nanoparticles loaded with therapeutic drugs such as doxorubicin. Surface modifications are made in the body and a ligand such as the HER2 receptor is targeted. There are advances in treatment, especially in breast cancer.

Conclusion:

Nano drug delivery systems are promising tools in cancer treatment, offering targeted therapies while minimizing toxicity. Thus the healing effect is improved and the effects of the "dust" tissue are "released". question. Optimizing the design of "NDDS" is necessary to improve the use of "targeting", "specificity" and "location" and "translation barriers" analysis.

NAME :- HAROON RASHID MAGRY
20-B-PHAR-138
RIMT UNIVERSITY (147301) PB.

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