

SYNTHESIS OF NEW DOSAGE FORMS OF "CYCLOPHOSPHAMIDE" BY DOUBLE EMULSION

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Different types of cancer are the leading cause of death worldwide. Billions of dollars are spent on cancer treatment. The world health organization (who) estimates that the number of cancer cases will increase by 70% over the next 20 years. It is very dangerous for humanity. In most cases, cancer can be cured if it is detected in the early stages of the disease by surgery, radiation therapy or chemotherapy. Chemotherapy is the most common method, but adverse effects on the quality of life of patients are present and can cause reverse effects. This situation can be changed with the help of modern achievements, for instance nanotechnology. Nanotechnology is a great advance in engineering and science, and scientists have revolutionized the way that it can be used in small quantities, in length, in atomic particles, in all fields of production, and in medicine.

A drug delivery system such as nanoparticles is an indispensable material that improves the pharmacological and therapeutic properties of anticancer drugs. Nanoparticles, play an important role in drug delivery, absorption and stability in the body. With nanoparticles, you can reduce the toxicity of the drug by injecting anti-inflammatory drugs into nanoparticles. Various therapeutic agents are used to treatment cancer. Examples include cyclophosphamide, doxorubicin, paclitaxel and cisplatin. This paper presents methods for obtaining anticancer drug "Cyclophosphane" in the form of polymer nanoparticles. The reason for choosing this drug is its solubility of active substances. Structure of Cyclophosphamide is a synthetic alkylating agent compound exhibiting high hydrophilicity.

The effect of PVA concentration (1%, 2%, 6%, 5%, 7%) was investigated nanoparticles. As a result, the average diameter of the nanoparticles immobilized by the double emulsion method was 129 nm, 239 nm, 328 nm, 612 nm, 300 nm, respectively, and the polydispersity was 0.436, 0.643, 0.862, 0.786 and 0.652. As the concentration of PVA increases, the size and polydispersity of nanoparticles increases. The yield of nanoparticles was determined by gravimetric method and they reached the following values: 73.1% (PVA 1%), 78.6% (PVA 2%), 81.2% (PVA 5%), 84.3% (PVA 6%) 85.3% (PVA 7%).

A spectrophotometric method was used to determine degree of binding with polymer of drugs. The degree of binding determined equal to 77,6% (1%), 96,82% (2%), 90,78% (5%), 96,82% (6%), 97,5% (7%), accordingly.

The morphology of the obtained polymer nanoparticles was evaluated through scanning electron microscopy (SEM). According to the obtained micrographs, the average particle size in different concentrations of PVA was in the range of 300-2000 nm. The sizes of nanoparticles obtained in the PVA ratio of 1% from 200 to 300 nm and have a spherical structures.

Research at the nanoscale level offers new hope for a molecular solution to some of the most severe human diseases, significantly improving cancer prevention, detection and treatment.

References

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