

A Review on Nanostructured Lipid Carrier in Cancer Therapy

Kale Aparna, Gaikwad Chandrabhaga, Durgude Mansi, ModhaveAbhaya

Samarth College of Pharmacy, (Bangarwadi) Belhe, Pane, Maharashtra

Abstract: A set of illnesses known as cancer involve abnormal cell proliferation and can invade or spread to different bodily regions. In contrast to this, neoplasms do not spread. A lump, unusual bleeding, a persistent cough, unexplained weight loss, and a change in bowel habits are all potential warning signs and symptoms. These signs of cancer may be present, but there may be other causes as well. Humans are susceptible to over 100 different malignancies. It ranks as the second most frequent cause of mortality worldwide. Surgery, radiation, and chemotherapy are the mainstays of cancer treatment today, but each has several drawbacks and frequently fails to eradicate the disease. Due to their varied physical and chemical properties, nanomaterials have recently gained a lot of attention from scientists interested in cancer therapy.

Keywords: Neoplasm, Organic Nanoparticles, Inorganic Nanoparticles, Nanomaterials.

REFERENCES

- [1] Siegel RL, Miller KD, Jemal A. Cancer statistics, 2016. CA Cancer J. Clin. 2016, 66, 7–30.
- [2] Tiwari M. Nano cancer therapies strategies. J. Cancer Res. Therapy. 2012, 8, 19–22.
- [3] Mishra R, Acharya S, Sahoo SK. Cancer nanotechnology: application of nanotechnology in cancer therapies. Drug Discovery Today 2010, 15, 842–850.
- [4] Ferrari M. Cancer nanotechnology: opportunities and challenges. Nat. Rev. Cancer 2005, 5, 161–171.
- [5] Yang H. Targeted nano systems: advances in targeted dendrimers for cancer therapies. Nanomedicine. Nanotechnology. Biol. Med. 2016, 12, 309–316.
- [6] Ma DD, Yang WX. Engineered nanoparticles induce cell apoptosis: potential for cancer therapies. Oncology target 2016, 7, 40882–40903.
- [7] Torchilin VP. Micellar nanocarriers: pharmaceutical perspectives. Pharm. Res. 2006, 24, 1–16.
- [8] Masood F. Polymeric nanoparticles for targeted drug delivery system for cancer therapies. Mater. Sci. Eng. C 2016, 60.
- [9] Owen SC, Patel N, Logie J, Pan G, Persson H, Moffat I, Sidhu SS, Shoichet MS. Targeting HER2+ breast cancer cells: lysosomal accumulation of anti-HER2 antibodies is influenced by antibody binding site and conjugation to polymeric nanoparticles. Control Release 2013, 172, 395–404.
- [10] Liu Y, Chen Z, Liu C, Yu D, Lu Z, Zhang N. Gadoliniumloaded polymeric nanoparticles modified with Anti-VEGF as multifunctional MRI contrast agents for the diagnosis of liver cancer.
- [11] Biomaterials 2011, 32, 5167–5176. [48] Luo C), Okubo T, Nangrejo M, Edirisinghe M. Preparation of polymeric nanoparticles by novel electrospray nanoprecipitation. Polym. Int. 2015, 64, 183–187.
- [12] Danhier F, Lecouturier N, Vroman B, Jérôme C Marchand-Brynaert J, Feron O, Préat V. Paclitaxel-loaded PEGylated PLGA-based nanoparticles: in vitro and in vivo evaluation. J. Control. Release 2009, 133, 11–17.
- [13] Mangraviti A, Tzeng SY, Kozielski K, Wang Y, Jin Y, Gullotti, Pedone M, Buaron N, Liu A, Wilson DR, Hansen SK, Rodriguez FI, Gao GD, DiMeco F, Brem H, Olivi A, Tyler D, Green IL Poly meric nanoparticles for nonviral gene therapies extend brain tumor survival in vivo. ACS Nano 2015, 9, 1736–1749.
- [14] Zhao Y, Ren W, Zhong T, Zhang S, Huang D, Guo Y, Yao X, Wang C, Zhang WQ, Zhang X, Zhang Q. Tumor-specific pH-responsive peptide-modified pH-sensitive liposomes containing doxorubicin for enhancing glioma targeting and anti-tumor activity. J. Control. Release 2016, 222, 56–66.

- [15] Chiang YT, La GL pH-Responsive polymer liposomes for intracellular drug delivery and tumor extracellular matrix switched-on targeted cancer therapies. *Biomaterials* 2014, 35, 5414-5424.
- [16] Ren L, Chen S, Li H, Zhang 21, Zhong J1, Liu M1, Zhou X. MRI guided liposomes for targeted tandem chemotherapies and therapeutic response prediction. *Acta Biomater.* 2016, 35,260-268
- [17] German SV, Navinkin NA, Kuznetsova NR, Zuev VV, Inozem seva DA, Anis kov AA, Volkova FK, Bucharskaya AB, Maslyakova GN, Fakhrullin RF, Terentyuk GS, Vodovozova EL, Gorin DA. Liposomes loaded with hydrophilic magnetite nanoparticles: preparation and application as contrast agents for magnetic resonance imaging. *Colloids Surf. B Biointerfaces* 2015, 135, 109-115.
- [18] BharaliDj, Khalil M, Gurbaz M, Simone TM, Mousa SA, Nano particles and cancer therapies: a concise review with emphasis dendrimers. *Int. J. Nanomed.* 2009, 4, 1-7. [17] Thambi T, Deepagan VG, Yoon HY, Han HS, Kim SH, Son S, Jo DG, Ahn CH, Suh YD, Kim K, Kwon C, Lee DS, Park 1H. Hypoxia responsive polymeric nanoparticles for tumor-targeted drug delivery. *Biomaterials* 2014, 35, 1735- 1743.
- [19] Li Y, Deng M, Kong FM, Zhou JP. Folate-decorated anticancer drug and magnetic nanoparticles encapsulated polymeric carrier for liver.
- [20] Sztandera K, Gorzkiewicz M, Klajnert-Maculewicz B. Gold nanoparticles in cancer treatment. *Molecular pharmaceuticals.* 2018 Nov 19;16(1):1-23.
- [21] Awasthi R, Roseblade A, Hansbro PM, Rathbone MJ, Dua K, Bebawy M. Nanoparticles in cancer treatment: opportunities and obstacles. *Current drug targets.* 2018 Oct 1;19(14):1696-709.
- [22] Alta'ee, Abdulsamie. (2003). A NEW RELATIONSHIP BETWEEN CYTIDINE DEAMINASE ACTIVITY AND CANCER VIA OXIDATIVE HYPOTHESIS. 10.13140/RG.2.1.1197.4483.
- [23] Gavas S, Quazi S, Karpiński TM. Nanoparticles for Cancer Therapy: Current Progress and Challenges. *Nanoscale Res Lett.* 2021 Dec 5;16(1):173. DOI: 10.1186/s11671-021-03628-6. PMID: 34866166; PMCID: PMC8645667.