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Biological evaluations of nanocarriers to improve the effectiveness of colorectal cancer treatment

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Citation

Cabral De Sä Leitão Oliveira, A. L. (2022, March 24). *Biological evaluations of nanocarriers to improve the effectiveness of colorectal cancer treatment*. Retrieved from <https://hdl.handle.net/1887/3280009>

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Stellingen behorend bij het proefschrift getiteld Biological evaluations of nanocarriers to improve the effectiveness of colorectal cancer treatment

1. Nanomedicine can be an ally in improving the pharmaceutical activity of chemotherapy. The use of nanoparticles enables the delivery of drugs to the tumor site, increasing its specificity.
2. A nanoscale drug delivery system is an alternative for failures in cancer treatment that faces several limitations such as: the lack of specificity of the drugs, generating systemic toxic effects, and also the great possibility of generating tumor cells resistant to the chemotherapy.
3. Nanoscale chemotherapeutic delivery systems have several advantages over the standard chemotherapy dosage form by increasing the bioavailability of the drug, minimizing its elimination by the liver/kidneys as well as increasing its concentration within the tumor environment.
4. The physicochemical properties of nanoscale drug delivery systems (eg, composition, size, shape, surface charge, surface functionalization, and surface hydrophobicity/hydrophilicity) play a key role in cell uptake and consequently increase the effectiveness of stimulating pathways of signaling tumor apoptosis.
5. The functionalization of PLGA nanoparticles with target cholesterol was able to enhance the cellular uptake of carvedilol, reducing the persistent inflammatory response and oxidative stress in peritonitis (Chapter 2).
6. Nanoparticle formulations containing oxaliplatin, retinoic acid and cholesterol allow for lower drug doses, while simultaneously increasing the antitumor activity, which results in more effective treatment (Chapter 3).
7. Tumor size reduction by nanoparticle formulations in *in vivo* studies indicates the induction of apoptosis, thereby overcoming one of the hallmarks of cancer: evasion to apoptosis (Chapter 3 and 4).
8. Nanoparticulate systems were able to maximize the efficacy of oxaliplatin chemotherapy, modulating tumor progression, increasing apoptosis and decreasing drug resistance (Chapter 4).
9. The coronavirus pandemic makes us rethink how to do science; how to study science and how to apply it to public health.
10. PhD research never seems to end, the more questions and conclusions we have, the more of them arise. There will always be more to be done, studied and answered.
11. Curiosity is a characteristic of the researcher, whether for science or during the coffee break.
12. I had more than scientific work, I had scientific pleasure.