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Short Communication

Biomembranes and Nanocarriers: Pioneering Nanotechnology in Food

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DESCRIPTION

Nanotechnology has become a rapidly growing field of science and engineering, with its applications being used in a wide variety of industries, from medical and healthcare to food engineering. The potential of nanotechnology for food engineering has been particularly exciting, as it has the potential to revolutionize the way food is produced, processed, and consumed. In this article, we will explore the use of nanotechnology for food engineering, focusing on two of its most important applications: biomembranes and nanocarriers. Nanotechnology is the manipulation and study of matter at the nanometer scale, which is one thousandth of a millimeter. It involves the use of nanoscale machines and materials, such as nanotubes, nanowires, and nanosystems, to create new materials, devices, and systems with unique properties. Nanotechnology has the potential to revolutionize the way we interact with the physical world, as it enables us to manipulate the properties of matter on a much smaller scale than ever before [1-4].

Biomembranes and nanocarriers are two important applications of nanotechnology for food engineering. Biomembranes are nano-thin layers of biological molecules that can be used to encapsulate and transport food ingredients. These biomembranes can be engineered to have specific properties, such as permeability, mechanical strength, and the ability to encapsulate and protect food ingredients. Nanocarriers, on the other hand, are nano-sized particles or structures that can be used to transport food ingredients and additives throughout the body. Nanocarriers can be engineered to have specific properties, such as size, shape, surface chemistry, and the ability to deliver specific nutrients [5,6].

The use of biomembranes and nanocarriers for food engineering has numerous benefits. For example, biomembranes and nanocarriers can help improve food safety by providing a protective barrier between food ingredients and potential contaminants. They can also help improve the stability of food ingredients by preventing them from breaking down or degrading. Additionally, the use of biomembranes and nanocarriers can help improve the bioavailability of nutrients, as they can be engineered to target specific areas of the body and deliver nutrients in a more efficient manner [7].

The potential of biomembranes and nanocarriers for food engineering is immense. For example, biomembranes and nanocarriers can be used to create new food ingredients and additives that can provide health benefits, such as improved digestion and absorption of nutrients. Additionally, they can be used to create food products that are more nutritious and have a longer shelf life. Biomembranes and nanocarriers can also be used to create new food packaging materials that are more environmentally friendly and reduce food waste. Moreover, they can be used to create new delivery systems for food ingredients and additives, such as patches, gels, and sprays [8-10].

The use of nanotechnology for food engineering is still in its infancy, but its potential is immense. In the future, we can expect to see even more applications of nanotechnology for food engineering, such as the use of biomembranes and nanocarriers to create more efficient and sustainable production and delivery systems for food ingredients and additives. Additionally, we can expect to see the use of nanotechnology to create more nutritious and healthier food products. Overall, the potential of nanotechnology for food engineering is exciting and its applications are numerous. With the help of biomembranes and nanocarriers, we can unlock the potential of nanotechnology for food engineering and create a future where food is safer, more nutritious, and more sustainable.

CONCLUSION

Nanotechnology for food engineering has the potential to revolutionize the way food is produced, processed, and consumed. Biomembranes and nanocarriers are two important applications of nanotechnology for food engineering, as they can be used to create new materials, devices, and systems with unique properties. The use of biomembranes and nanocarriers for food engineering has numerous benefits, including improved food safety, stability, and bioavailability of nutrients. In the future, we can expect to see even more applications of nanotechnology for food engineering, as it unlocks the potential

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REFERENCES

1. Rehman A, Jafari SM, Aadil RM, Assadpour E, Randhawa MA, Mahmood S. Development of active food packaging via incorporation of biopolymeric nanocarriers containing essential oils. Trends Food Sci Technol. 2020;101:106-121.
2. Rehman A, Tong Q, Jafari SM, Assadpour E, Shehzad Q, Aadil RM, et al. Carotenoid-loaded nanocarriers: A comprehensive review. Adv Colloid Interface Sci. 2020;275:102048.
3. Yaghmur A, Rappolt M. 14 Liquid crystalline nanoparticles as drug Nanocarriers. Colloids in Drug Delivery. 2010:337.
4. Singh S, Kumar V, Romero R, Sharma K, Singh J. Applications of nanoparticles in wastewater treatment. Nanobiotechnology in bioformulations. 2019:395-418.
5. Wu S, Li Y, Ding W, Xu L, Ma Y, Zhang L. Recent advances of persistent luminescence nanoparticles in bioapplications. Nanomicro Lett. 2020;12:1-26.
6. Cardellini J, Montis C, Barbero F, De Santis I, Caselli L, Berti D. Interaction of metallic nanoparticles with biomimetic lipid liquid crystalline cubic interfaces. Front Bioeng Biotechnol. 2022;10:848687.
7. Swami A, Shi J, Gadde S, Votruba AR, Kolishetti N, Farokhzad OC. Nanoparticles for targeted and temporally controlled drug delivery. Multifunctional nanoparticles for drug delivery applications: Imaging, targeting, and delivery. 2012:9-29.
8. Needham D, Arslanagic A, Glud K, Hervella P, Karimi L, Hoeilund-Carlsen PF, et al. Bottom up design of nanoparticles for anti-cancer diapeutics:"Put the drug in the cancer's food". J Drug Target. 2016;24(9):836-856.
9. Chen H, Sha H, Zhang L, Qian H, Chen F, Ding N, et al. Lipid insertion enables targeted functionalization of paclitaxel-loaded erythrocyte membrane nanosystem by tumor-penetrating bispecific recombinant protein. Int J Nanomedicine. 2018:5347-5359.
10. Lopes D, Lopes J, Pereira-Silva M, Peixoto D, Rabiee N, Veiga F, et al. Bioengineered exosomal-membrane-camouflaged abiotic nanocarriers: Neurodegenerative diseases, tissue engineering and regenerative medicine. Mil Med Res. 2023;10(1):1-26.