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# Cancer immunotherapy by immune checkpoint blockade and its advanced application using nanomaterials

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# Cancer immunotherapy by immune checkpoint blockade and its advanced application using nanomaterials Studies

## BACKGROUND

Cancer is the second leading cause of death worldwide. Traditional approaches, such as surgery, chemotherapy, and radiotherapy have been the main cancer therapeutic modalities in recent years. Cancer immunotherapy is a novel therapeutic modality that potentiates the immune responses of patients against malignancy.

## MATERIALS & METHODS

Immune checkpoint proteins expressed on T cells or tumour cells serve as targets for inhibiting T cell over-activation, maintaining the balance between self-reactivity and autoimmunity.

Tumours essentially hijack the immune checkpoint pathway in order to survive and spread. Immune checkpoint inhibitors (ICIs) are being developed as a result to reactivate the anti-tumour immune response.

## RESULT

Recent advances in nanotechnology have contributed to the development of successful, safe, and efficient anticancer drug systems based on nanoparticles. Nanoparticle-based cancer immunotherapy overcomes numerous challenges and offers novel strategies for improving conventional immunotherapies.

## CONCLUSION

The fundamental and physiochemical properties of nanoparticles depend on various cancer therapeutic strategies, such as chemotherapeutics, nucleic acid-based treatments, photothermal therapy, and photodynamic agents.