

Abstract

Impact of Nanotechnology on the future of pharmaceuticals and Nutraceuticals: The Road toward precision Medicines –Case Studies [†]

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Over the past decade, evidence from the scientific and medical communities has demonstrated that nanobiotechnology and nanomedicine have tremendous potential to affect numerous aspects of cancer and other disorders in term of early diagnosis and targeted therapy. The utilization of nanotechnology for the development of new Nano-carrier systems has the potential to offer improved targeted delivery through increased solubility and sustained retention and more importantly active targeting. One of the major advantages of this innovative technology is its unique multifunctional characteristics. Targeted delivery of drug incorporated nanoparticles, through conjugation of site-specific cell surface markers, such as tumor-specific antibodies or ligands, which can enhance the efficacy of the anticancer drug and reduce the side effects. Additionally, multifunctional characteristics of the Nano-carrier system would allow for simultaneous imaging of tumor mass, targeted drug delivery and monitoring (Theranostics).

A summary of recent progress in nanotechnology as it relates to nanoparticles and drug delivery will be reviewed. Nano Nutraceuticals using combination of various natural products provide a great potential in diseases prevention. Additionally, various Nanomedicine approaches for the detection and treatment of various types of organ specific delivery, vascular targeting, and vaccine will be briefly discussed.

Reference: Mousa SA, Bawa R, and Audette GF (Editors): *The Road from Nanomedicine to Precision Medicine*, Jenny Stanford Publishing (2020) – 1200+ pages, 36 chapters [ISBN 978-981-4800-59-4 (Hardcover), 978-0-429-29501-0 (eBook)].