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Review

Carbon Nanotropes: A Contemporary Paradigm in Drug Delivery

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Abstract: Discovery of fullerenes and other nanosized carbon allotropes has opened a vast new field of possibilities in nanotechnology and has become one of the most promising research areas. Carbon nanomaterials have drawn interest as carriers of biologically pertinent molecules due to their distinctive physical, chemical and physiological properties. We have assigned the nomenclature "Carbon Nanotropes" to the nanosized carbon allotropes. Carbon nanotropes such as fullerenes, carbon nanotubes (CNTs) and graphenes, have exhibited wide applicability in drug delivery, owing to their small size and biological activity. The nanotherapeutics/diagnostics will allow a deeper understanding of human ills including cancer, neurodegenerative diseases, genetic disorders and various other complications. Recently, nanomaterials with multiple functions, such as drug carrier, MRI, optical imaging, photothermal therapy, *etc*., have become more and more popular in the domain of cancer and other areas of research. This review is an endeavor to bring together the usefulness of the carbon nanomaterials in the field of drug delivery. The last section of the review encompasses the recent patents granted on carbon nanotropes at United State Patent Trademark Office (USPTO) in the related field.

Keywords: nanomaterials; carbon allotroptes; toxicity of carbon nanomaterials; CNTs; fullerenes; graphenes; drug delivery systems; anticancer drug delivery; delivery of biomoleculses; biosensors