



Journal of Hospital Pharmacy
An Official Publication of Bureau for Health & Education Status Upliftment
(Constitutionally Entitled as Health-Education, Bureau)

Nanohybrids - a brief review on uses of superior next-generation materials

*Kancharla Kameswararao*¹, Dr Mamidi Trinadharao², Chintakayala Sairam³,
Barla Ananthalakshmi⁴, Marpina G.V.V.S.D.Bhavani⁵, Lavudu Sivannarayana⁷,
Koda Uma⁸*

1. Associate Professor, Department of Pharmaceutics, Adarsa college of Pharmacy, G.kothapalli, Gokavaram Mandal, East Godavari district, Andhra Pradesh-533285. e-mail. id-kameshkancharla@gmail.com.
2. Professor, Department of Pharmaceutics, Adarsa college of Pharmacy, G.kothapalli, Gokavaram Mandal, East Godavari district, Andhra Pradesh-533285. e-mail. id-thrinadharaomamidi@gmail.com
3. Student, Department of Pharmaceutics, Adarsa college of Pharmacy, G.kothapalli, Gokavaram Mandal, East Godavari district, Andhra Pradesh-533285. e-mail. id-sairamchinthakayala154@gmail.com
4. Student, Department of Pharmaceutics, Adarsa college of Pharmacy, G.kothapalli, Gokavaram Mandal, East Godavari district, Andhra Pradesh-533285. e-mail. id- aravindvlb65@gmail.com
5. Student, Department of Pharmaceutics, Adarsa college of Pharmacy, G.kothapalli, Gokavaram Mandal, East Godavari district, Andhra Pradesh-533285. e-mail. id- vv781601@gmail.com
6. Student, Department of Pharmaceutics, Adarsa college of Pharmacy, G.kothapalli, Gokavaram Mandal, East Godavari district, Andhra Pradesh-533285. e-mail. id- sivalavudu10@gmail.com
7. Student, Department of Pharmaceutics, Adarsa college of Pharmacy, G.kothapalli, Gokavaram Mandal, East Godavari district, Andhra Pradesh-533285. e-mail. id- sri220613@gmail.com

Corresponding author address:

K. Kameswararao, Associate Professor, Adarsa college of Pharmacy, G.kothapalli, Gokavaram Mandal, East Godavari district, Andhra Pradesh-533285.

Email Id: serviceheb@gmail.com, kameshkancharla@gmail.com

ABSTARCT:

Nanotechnology is a branch of science devoted to producing and using structures, devices & systems by manipulating atoms and molecules at the nanoscale, to a great extent in the last decades. Nanohybrids are nanosized particles with organic and inorganic elements connected through noncovalent bonds at the nanometer scale. It has several sizes, shapes, colours, and materials improving mechanical strength, thermal stability, optical properties, electrical conductivity, biocompatibility, customizable surface chemistry, and sustainability. Nanohybrids are classified into different types based on their parent material, the material used for nanohybrids, and the interaction between the two phases. Nanohybrids have a wide range of applications in various fields including photocatalysis, energy storage, designing of drug delivery systems for diagnosis treatment, enhanced bioavailability, and masking the bitter taste and fuel cells as a catalyst. Nanohybrids are used to remove impurities from water and soil. Nanohybrids have various applications in construction, food packaging agent, and the wood industry to enhance

thermal insulation, corrosion resistance, waterproofing, and mechanical properties, and Thermal & Electrical conductivity. Nanohybrids are used in cosmetics, and sunscreens to provide UV protection & antimicrobial action. Nanohybrid materials are used in aerospace due to their lightweight & high strength and also used in the agriculture field to enhance nutrient efficiency, fertilizers release, Pesticide control, and improved soil fertility. Nanohybrids act as contrast agents for imaging like MRI, CT, X-ray, IR, NIR, and phototherapy & photodynamic therapy. Nanohybrids also play an important role in pandemic conditions to control and prevent transmission of virus to prepare of PPE, air filter masks & biomedical waste management. Nanohybrids are also helpful as mosquito larvicides and are also used in biomedical devices. Nanohybrids also have wound-healing properties by promoting tissue regeneration, improving tissue strength and elasticity. This review mainly focuses on nanohybrid characters, types and applications in various fields.

Key words: Nanohybrids, Hybrid materials, Nanotechnology, Nanoparticulates, Drug delivery systems, Environment remediation.

Access this Article Online	Quick Response Code:
Website: http://www.journalofhospitalpharmacy.in	
Received on 1/07/2025	
Accepted on 8/07/2025 © HEB All rights reserved	