



Public Relations Office

Jamia Hamdard

Press Release

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Jamia Hamdard faculty develops and granted patent to a compound for the detection and killing of cancer cells

Jamia Hamdard is pleased to announce the grant of a patent for detection and killing of cancer cells.

Dr . M. S. Ameerunisha and co-workers from Faculty of Science, Jamia Hamdard have designed and developed a gadolinium peptide complex and a composite with carbon nanotubes as anticancer agents. The results have been patented by **Intellectual Property under Government of India.**

The compounds can be used **for the detection as well as for the killing of cancer cells.**

The salient features of the invention are as follows:

“A gadolinium(III) complex and its carbon nanotube composite thereof for anticancer activity”, said complex with potent anticancer activity in micromolar concentration having the molecular formula $[Gd(L^1)_2(NO_3)_3]$ and molecular structure has been formulated.

Further, a carbon nanotube composite of the gadolinium(III) complex $[Gd(L^1)_2(NO_3)_3]$ with potent anticancer activity in nanomolar concentration having molecular representation of $[Gd(L^1)_2(NO_3)_3]@CNT$, has been designed based on the gadolinium(III) complex $[Gd(L^1)_2(NO_3)_3]$.

The present invention takes investigative note of the functional aspects of the structural part of the present invention. The oligopeptide, L^1 was prepared in a

novel synthetic route using tetra methyl benzo triazolyl uranium hexafluorophosphates (HBTU) as a peptide coupling reagent. The cytotoxic efficacy of the gadolinium(III) complex $[Gd(L^1)_2(NO_3)_3]$ as well as its CNT composite $[Gd^{III}(L^1)_2(NO_3)_3]@CNT$ against cancer/ tumor are estimated. Whereas it is found that gadolinium(III) complex $[Gd(L^1)_2(NO_3)_3]$ is effective against cancer in micromolar concentration, its CNT complex $[Gd^{III}(L^1)_2(NO_3)_3]@CNT$ is effective even in nanomolar concentration, wherein cancer cell model used is human cervical carcinoma (HeLa) cell line.

About the Dr M.S .Ammerunisha

Dr. M. S. Ameerunisha Begum is Assistant professor of Chemistry in Jamia Hamdard. She is currently interested in the design and development of metal based anticancer drugs and hydrogen gas generation from water using graphene/carbon nanotube composites as catalysts. She was a Humboldt fellow as well as a Max-Planck-Institute post-doctoral fellow and did her Ph. D. from University of Hyderabad, India. Her research is funded by Jamia Hamdard (research promotion grant) and Department of Science and Technology, Government of India under extramural research.

The co-author of the invention is Dr. Farah Khan, Assistant Professor in the Department of Biochemistry, SCLS, Jamia Hamdard. Her research work focuses on the involvement of Protein phosphatases in the development of obesity and associated complications like insulin resistance and memory impairment. She is an ICMR DHR fellow and has successfully guided three PhD scholars and has more than 25 research articles published.

Gulzar Ahmad

Public Relations Officer (PRO)

