

CDFD scientists find how antimalarial drug Mefloquine damages nervous system

By Dr. Bilqeesa Bhat

New Delhi, February 06: A team of scientists from Computational and Functional Genomics Group at Department of Biotechnology's Centre for DNA Fingerprinting and Diagnostics (CDFD), Hyderabad has found out the mechanism that could be responsible for damage caused to nervous system by an antimalarial drug called Mefloquine.

Malaria is an infectious disease that is caused by different species of Plasmodium. Over past few years, several antimalarial drugs have been developed and used. Mefloquine, which is one of the much used drug, is reported to cause damage to nervous system leading to multiple mental disorders. The exact mechanism for this has remained unclear so far.

A team of three scientists, Dr. Akash Ranjan, Dr. Debasish Kumar Ghosh and Dr. Abhishek Kumar from the Centre for DNA Fingerprinting and Diagnostics has now shown that Mefloquine binds to and inactivates the human acyl-CoA binding protein (hACBP), which are present within body cells. The hACBP acts as an intracellular carrier (vehicle) of fats. Blocking of this protein by Mefloquine results in accumulation of lipid droplets inside a particular type of cells called human neuroblastoma cells (IMR-32 and Neuro2A), and generates oxidative stress in cells. Fat droplet accumulation and oxidative stress generated inside the cells results in death of human the neuroblastoma cells (apoptosis).

The new finding may help to develop strategies that can reduce the damage caused to the nervous system by Mefloquine. The research has been published in reputed peer review journal *NeuroToxicology*.

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