

DBT/ BIOCARE

Centre of Excellence on Evaluation of Biology and Mechanisms of Resistance in Leukemia

By Sunderarajan Padmanabhan

New Delhi, April 08: Acute promyelocytic leukemia (APL), a type of cancer of the white blood cells, is characterized by mutations in a novel PML-RARA oncogene. The net effect is an expansion of immature cells at the expense of the normal hematopoietic compartment often rapidly leading to death.

A research group at CMC Vellore supported by DBT has established low cost effective care using arsenic trioxide (ATO) in acute promyelocytic leukemia (APL) and was instrumental in moving this therapy to front line therapy in the management of APL in the world.

The relative specificity of ATO in the treatment of APL results from the ability of ATO to bind directly to the PML (promyelocytic leukemia) and chimeric PML-RARA (promyelocytic leukemia-retinoic acid receptor- α) protein which in turn leads to its degradation inside the cell mediated by intra-cellular organelles called proteasomes.

The group has further reported on novel mechanism of resistance to ATO both based on single center and multi-center studies. This understanding was translated to development of a low- cost effective care clinical trial in the management of relapsed APL by re-purposing approved drugs to treat this cancer.

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