



ABSTRACT NO: ICCPPR-SPS-172

## **OMACETAXINE: A PROTEIN TRANSLATION INHIBITOR FOR THE TREATMENT OF CHRONIC MYELOGENOUS LEUKEMIA (CML)**

**<sup>1</sup> AJAY KUMAR R <sup>2</sup> SALMAN ANSARI S**

**<sup>3</sup> corresponding author: Dr. M.DHEENADHAYALAN \***

**<sup>1</sup> Pharm.D 5<sup>th</sup> year, School of Pharmaceutical Sciences, Vels Institute of Science, Technology and Advanced Studies.**

**<sup>2</sup> Assistant professor, Department of Pharmacy practice, School of Pharmaceutical Sciences, Vels Institute of Science, Technology and Advanced Studies.**

**PHONE: +91 7305156828**

**EMAIL ID: ajaykumarrpharmd@gmail.com**

### **ABSTRACT**

Chronic myelogenous leukemia (CML) is a myeloproliferative neoplasm caused by the BCR-ABL fusion oncogene with constitutive tyrosine kinase activity and uncontrolled cell proliferation. Although tyrosine kinase inhibitors (TKIs) are the current standard of therapy, resistance to therapy—most notably the BCR-ABL kinase domain mutations T315I—is a significant challenge. Omacetaxine mepesuccinate, a novel first-in-class reversible protein translation inhibitor, has been proven to be a valuable therapeutic choice for TKI-resistant CML. By occupying the ribosomal A-site, omacetaxine blocks elongation of protein synthesis, resulting in degradation of short-lived oncoproteins such as BCR-ABL and Mcl-1, which supports apoptosis. Its effectiveness has been shown in patients with multi-TKI-resistant CML, even those with the T315I mutation. Hematologic and cytogenetic responses have been obtained with an acceptable safety profile, although myelosuppression remains the most common adverse effect. Omacetaxine offers a new, mutation-independent mechanism of action, addressing an unmet therapeutic need in CML treatment. Additional research is investigating its use with combination regimens and in earlier lines of treatment.

**KEYWORDS:** Drug resistance; accelerated; blast; myeloid leukemias and dysplasias; omacetaxine; pharmacotherapeutics.