Trilaciclib

National Cancer Institute

Source

National Cancer Institute. Trilaciclib. NCI Thesaurus. Code C123281.

A small molecule, competitive inhibitor of cyclin dependent kinases 4 and 6 (CDK4/6), with potential antineoplastic and chemoprotective activities. Upon intravenous administration, trilaciclib binds to and inhibits the activity of CDK4/6, thereby blocking the phosphorylation of the retinoblastoma protein (Rb) in early G1. This prevents G1/S phase transition, causes cell cycle arrest in the G1 phase, induces apoptosis, and inhibits the proliferation of CDK4/6-overexpressing tumor cells. In patients with CDK4/6-independent tumor cells, G1T28 may protect against multi-lineage chemotherapy-induced myelosuppression (CIM) by transiently and reversibly inducing G1 cell cycle arrest in hematopoietic stem and progenitor cells (HSPCs) and preventing transition to the S phase. This protects all hematopoietic lineages, including red blood cells, platelets, neutrophils and lymphocytes, from the DNA-damaging effects of certain chemotherapeutics and preserves the function of the bone marrow and the immune system. CDKs are serine/threonine kinases involved in the regulation of the cell cycle and may be overexpressed in certain cancer cell types. HSPCs are dependent upon CDK4/6 for proliferation.