Bortezomib (Velcade, PS-341) is a proteasome inhibitor that displays anticancer chemotherapeutic and antiviral activity in vitro, in vivo, and in clinical settings; it is clinically used or in trials for treatment of glioma, acute lymphoblastic leukemia (ALL), mantle cell lymphoma, and multiple myeloma. In glioma cells, bortezomib induces activation of caspase 3 and apoptosis; its inhibition of the proteasome stimulates angiogenesis through an increase in production of VEGF and HIF-1β. In colorectal cancer cells, bortezomib increased levels of ROS, inducing G2/M phase cell cycle arrest. Additionally, bortezomib induces neuropathy, potentially through increasing polymerized tubulin levels in neurons. In models of Rift Valley Fever Virus, bortezomib decreases viral load by suppressing nonstructural S-segment protein formation of nuclear filaments.

References


