Piperlonguminine is found in several species of the *Piper* plant and displays many beneficial characteristics, including antithrombotic, anti-inflammatory, anti-hyperlipidemic, antibacterial, anti-parasitic, antifungal, neuroprotective, and anticancer chemotherapeutic activities. In animal models, piperlonguminine inhibits generation of factor Xa and thrombin and production of TNF-α-induced plasminogen activator inhibitor type 1 (PAI-1), increasing bleeding time. This compound decreases PMA-stimulated phosphorylation or activation of NF-κB, p38, ERK1/2, and JNK and also decreases levels of IL-6 and TNF-α. In other animal studies, piperlonguminine increases LDL receptor mRNA and decreases total serum cholesterol (including an increase in HDL and decreases in LDL and triglyceride levels). Piperlonguminine also promotes adipogenesis, increasing mRNA levels of adiponectin, glutamate transporter 4 (GLUT4), fatty acid binding protein aP2, and PPARγ in vitro. This compound displays cytotoxicity against gram-positive bacteria (*Bacillus*), parasites (*Trypanosoma cruzi*), and fungus (*Candida*). Piperlonguminine decreases levels of amyloid-B (Aβ) and amyloid precursor protein (APP) in vitro, suggesting potential benefit in the treatment of Alzheimer’s disease. Additionally, piperlonguminine decreases tumor growth in animal models.

References


