Abstract

A protease inhibitor protein with the molecular mass of 11,804.931 Da was isolated and purified from *Aloe barbadensis* Mill (*Aloe vera*) leaf gel by ion exchange chromatography. Therefore, this protein was designated as AVPI-12. The isoelectric point of the protein was about 7.43. The first ten amino acid sequence from the N-terminal was R-D-W-A-E-P-N-D-G-Y, which did not match with other protease inhibitors in database searches, indicating AVPI-12 is a novel protease inhibitor. AVPI-12 strongly resisted digestion by the serine proteases human plasmin and bovine trypsin. AVPI-12 could protect the γ-subunit of human fibrinogen from plasmin and trypsin digestion, similar to the human plasma serine protease inhibitor α_2-macroglobulin. In addition, AVPI-12 could also protect the γ-subunit of fibrinogen from the cysteine protease papain digestion. The results of colorimetric method and small-angle X-ray scattering showed that AVPI-12 could protect human fibrin clot from complete degradation by plasmin.