

**Fig. S1.** The UV-Vis spectrum of PAP-1a.

**Fig. S2.** Elution profile of PAP on DEAE Sepharose™ (GE, USA) Fast Flow column an NaCl solution gradient (0, 0.1 and 0.2M).

**Fig. S3.** Elution profile of PAP-1a on Sephacryl™ S-300 High resolution column (GE, USA) with distilled water.

**Fig. S4.** Molecular weight distribution of PAP-1a on High Performance Gel Permission Chromatogram (A, HPGPC, Shimadzu, Japan) and the calibration curve (B).

**Fig. S5.** Rt of standards of HPLC (Shimadzu, Japan) analysis.