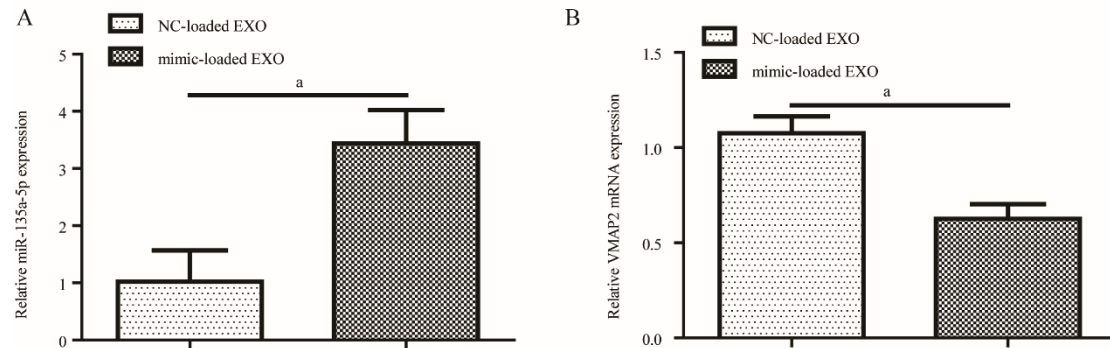
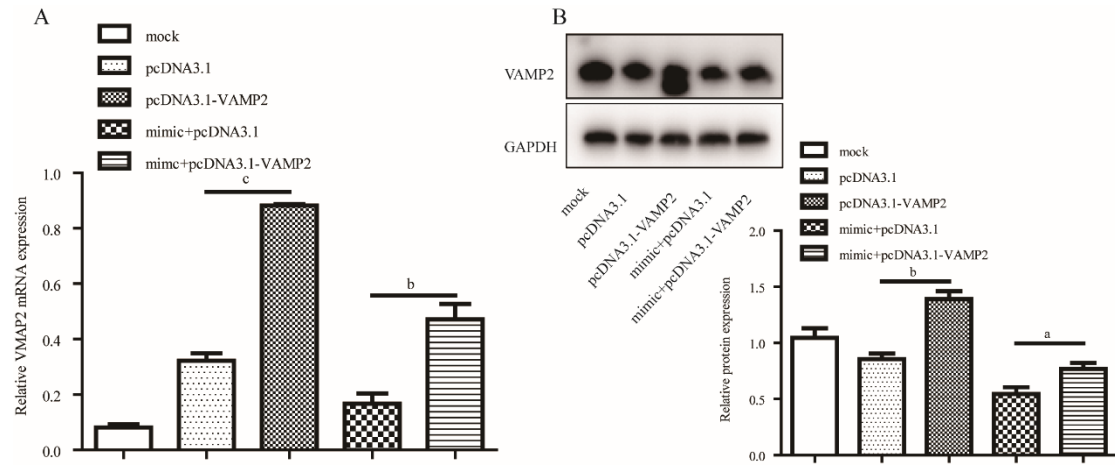


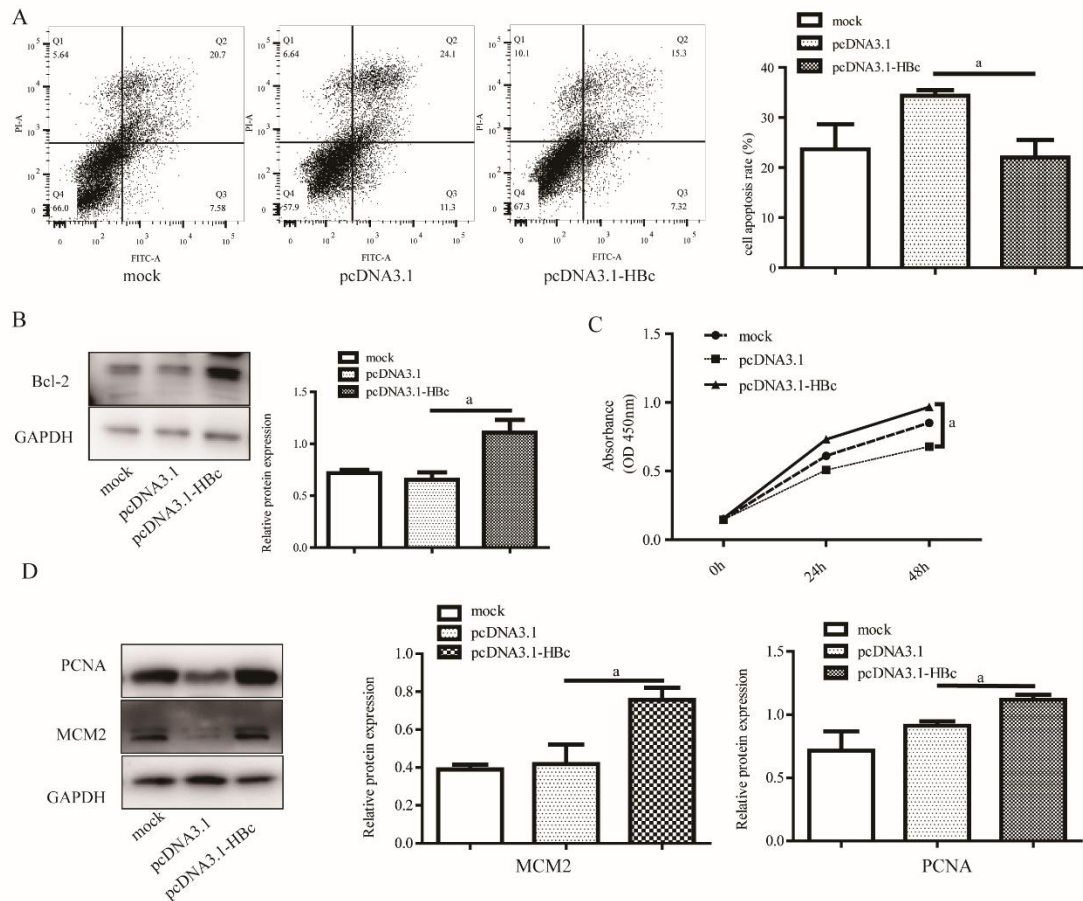
## Supplementary materials



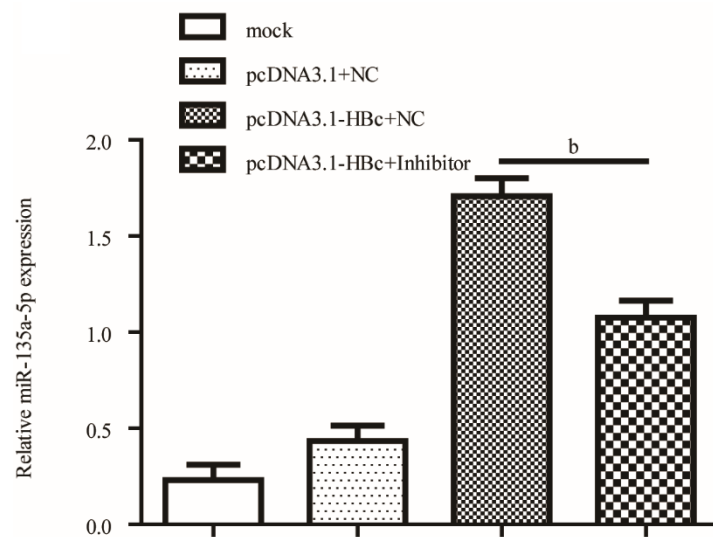
**Supplementary Figure 1 Expression of miR-135a-5p and target gene in HepG2 cells cultured with exosomes.** A and B: Quantitative polymerase chain reaction assay analyzed the expression of miR-135a-5p and vesicle-associated membrane protein 2 in HepG2 cells that cultured with mimic-loaded EXO compared HepG2 cells cultured with NC-loaded EXO. <sup>a</sup> $P < 0.05$ .



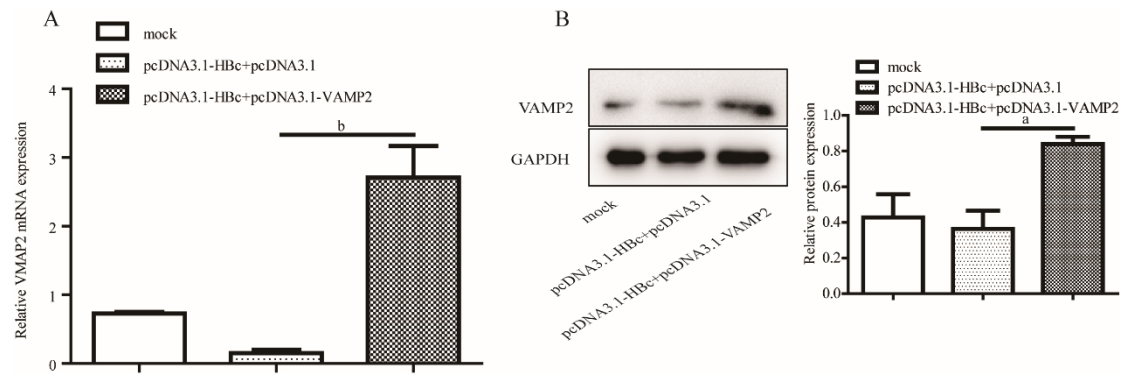
**Supplementary Figure 2 The expression of vesicle-associated membrane protein 2 in co-transfection group of miR-135a-5p mimics and pcDNA3.1-vesicle-associated membrane protein 2 or pcDNA3.1.** A and B: The expression of vesicle-associated membrane protein 2 was measured by quantitative polymerase chain reaction and Western blot in HepG2 cells after transfected with the indicated plasmid shown in the figure above. <sup>a</sup> $P < 0.05$ ; <sup>b</sup> $P < 0.01$ ; <sup>c</sup> $P < 0.001$ .



**Supplementary Figure 3 Hepatitis B core antigen promoted hepatocellular carcinoma cells anti-apoptosis and proliferation.** A: Annexin V-FITC/PI assay was used to determine the apoptosis rate of HepG2 cells treated with pcDNA3.1-hepatitis B core antigen (HBc) plasmid; B: Protein level of Bcl-2 detection in HepG2 cells transfected with pcDNA3.1-HBc by Western blot; C: Cell counting kit 8 assay was used to examine the proliferation of HepG2 cells transfected with pcDNA3.1-HBc plasmid; D: The protein expression of MCM2 and proliferating cell nuclear antigen analyzed by Western blotting in HepG2 cells transfected with pcDNA3.1-HBc plasmid. <sup>a</sup> $P < 0.05$ .



**Supplementary Figure 4 miR-135a-5p level detection using quantitative polymerase chain reaction.** miR-135a-5p expression was measured by quantitative polymerase chain reaction in HepG2 cell co-transfected with pcDNA3.1-hepatitis B core antigen plasmid and miR-135a-5p inhibitors and their negative groups. <sup>b</sup> $P < 0.01$ .



**Supplementary Figure 5 The expression of vesicle-associated membrane protein 2 in HepG2 cells co-transfected pcDNA3.1-hepatitis B core antigen and pcDNA3.1-vesicle-associated membrane protein 2.** A and B: Both mRNA and protein level were assessed in HepG2 cells co-transfected with pcDNA3.1-hepatitis B core antigen (HBc) and pcDNA3.1-vesicle-associated membrane protein 2 plasmids, and the co-transfection group of pcDNA3.1-HBc and pcDNA3.1 by quantitative polymerase chain reaction and Western blot. <sup>a</sup> $P < 0.05$ ; <sup>b</sup> $P < 0.01$