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Title: The effect of SDF-1/CXCR4 on expression of VEGF and MMP-9 in small cell lung cancer

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Body: Objective To explore the effect of SDF-1, AMD3100, and LY294002 on expression of VEGF and MMP-9 in NCI-H446 cell, and to explore the mechanism of small cell lung cancer invasion by SDF-1. Methods There were 5 groups in the experiment: control group (SDF-1 negative group); SDF-1 50ng/ml group; SDF-1 100ng/ml group; SDF-1 (100ng/ml) + AMD3100 group; SDF-1 (100ng/ml) + LY294002 group. With serum-free medium for 24 hours, to observe the VEGF and MMP-9 expression with different treatment conditions using RT-PCR to detect the expression of VEGF & MMP-9, and ELISA to measure the expression of VEGF and MMP-9 in cell culture supernatant. Results VEGF and MMP-9 expression in supernatants were increased in SDF-1 treated group and could be inhibited by AMD3100 and LY294002. Compared with the control group, 100ng/ml SDF-1 treated group, the concentration of VEGF and MMP-9 was significantly increased, [(826 ± 102) pg / ml VS (360 ± 21) pg / ml], [(105 ± 4) pg / ml VS (30 ± 9) pg / ml] ($P < 0.05$); VEGF concentration of SDF-1 (100ng/ml) + AMD3100 treated, SDF-1 (100ng/ml) + LY294002 treated group decreased, [(224 ± 55) pg / ml VS (826 ± 102) pg / ml], [(379 ± 203) pg / ml VS (826 ± 102) pg / ml] ($P < 0.05$). So as to MMP-9 levels, [(31 ± 2) pg / ml VS (105 ± 4) pg / ml], [(25 ± 4) pg / ml VS (105 ± 4) pg / ml] ($P < 0.05$). Conclusion After treated with SDF-1, the expression of VEGF and MMP-9 was significantly increased, and could be inhibited by AMD3100 and LY294002, which suggested that SDF-1/CXCR4 participate in tumor invasiveness and metastasis in small lung cancer by promoting secretion of VEGF and MMP-9.