AFP对裸鼠肝癌移植瘤生长的促进作用及对血管形成相关因子的影响

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Title: The effect and possible angiogenesis mechanism of AFP transfection of SMMC-7721 xenografts in nude mice

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摘要: 目的：探讨AFP对肝癌移植瘤生长及血管生成调节因子表达的影响。方法：采用pEGFP-N1-AFP和pEGFP-N1质粒分别转染SMMC-7721细胞构建SMMC-7721/AFP和SMMC-7721/CON细胞，将裸鼠分为实验组和对照组，分别于裸鼠皮下接种SMMC-7721/AFP和SMMC-7721/CON，从而建立人肝癌移植瘤模型，动态观测裸鼠肿瘤体积和质量变化;取肿瘤组织用实时定量RT-PCR和Western blot检测组织中的HOXA7、eIF4E、VEGFA和FGF2表达。结果：构建SMMC-7721/AFP和SMMC-7721/CON细胞，并将其接种到裸鼠皮下成功建立肝癌移植瘤模型。与对照组比较，实验组移植瘤体积与质量显著增高，成瘤后第12天，实验组移植瘤体积和质量分别为（307.71±47.63）mm3和（20.243±0.411）g，差异均具有显著性（P=0.012，P=0.04）。实时定量RT-PCR结果显示AFP过表达提高了肝癌移植瘤细胞HOXA7、eIF4E和FGF2 mRNA表达水平，分别为2.488±1.155、23.828±2.465和4.407±1.164，与对照组相比增高程度具有显著性差异，但VEGFA mRNA表达未见显著增强。Western blot结果显示：SMMC-7721/AFP较SMMC-7721/CON细胞显著提高HOXA7蛋白表达水平，但对FGF2和VEGFA无显著影响。结论：AFP基因转染可明显促进裸鼠肝癌移植瘤的生长，该作用可能与其促进肿瘤血管形成因子在mRNA水平的调控有关。

Abstract: Objective:To investigate the effect and possible angiogenesis mechanism of AFP gene transfection of SMMC-7721 xenografts in nude mice.Methods:An expressing vector encoding AFP was recombined and then transfected into cultured SMMC-7721 with lipofectin.SMMC-7721/AFP and SMMC-7721 were inoculated nude mice to establish nude mice subcutaneous transplantation tumor of hepatocellular carcinoma model.Nude mice tumor volume and quality were observed dynamically HOXA7,eIF4E,VEGFA,FGF2 and MDM2 were measured in tumor tissue by real time RT-PCR and Western blot.Results:SMMC-7721/AFP and SMMC-7721/CON were established.Then xenografts in nude mice were successfully established.Compared with untransfected group,AFP gene transfection in experimental group promoted tumor volume and quality with significant difference.The volume and quality of the xenografts in nude mice were （307.71±47.63）mm3 and （20.243±0.411）g separately.The mRNA expression of HOXA7，eIF4E，VEGFA，FGF2 and MDM2 were upregulated.RT-PCR showed that AFP overexpression improved the mRNA expression of HOXA7,eIF4E and FGF2 mRNA to 2.488±1.155，23.828±2.465 and 4.407±1.164 with significance.However,VEGFA mRNA expression improved without significant difference.And Western blot results showed that HOXA7 was significantly increased in SMMC-7721/AFP compared to that in SMMC-7721/CON.However,the protein level of FGF2 and

VEGFA had no significant alteration.Conclusion:AFP gene transfection can promote the growth of nude mouse transplantation tumor of hepatocellular carcinoma significant,which may be related with tumor angiogenesis.

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