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论著

重组卡介苗rBCG Ag85A ESAT 6对人巨噬细胞免疫刺激活性的影响

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摘要：

目的探究重组卡介苗(rBCG Ag85A ESAT 6,rBCG AE)对人巨噬细胞免疫刺激活性的影响，为该疫苗的应用提供重要的理论依据和实验基础。方法将rBCG AE（rBCG AE感染组）及卡介苗（BCG感染组）分别感染体外培养的受PMA诱导分化的人单核细胞系（THP 1细胞株），分别于感染后24、48及72 h，观察细胞表面分子CD80和CD86的表达及细胞培养基中干扰素（IFN） γ及肿瘤坏死因子（TNF） a 的诱生量。结果THP 1细胞（未受PMA诱导分化的细胞）和PMA分化的THP 1细胞培养4 h后，细菌吞噬率分别为（8.45±1.54）%、（91.26±2.13）%，后者显著高于前者（P=0.01）；感染后24、48及72 h，rBCG AE组CD86阳性细胞比率分别为 (32.84±7.13）%、（48.42±5.46）%、（39.48±5.67）%，CD80阳性细胞比率分别为(20.28±1.13）%、（23.67±1.23）%、（23.19±1.58）%，均显著高于BCG感染组的CD86［分别为（28.17±5.26）%、（40.09±7.21）%、（31.26±6.85）%］和CD80阳性细胞比率［分别为（22.15±1.82）%、（23.27±1.91）%、（22.68±0.87）%］，差异均有统计学意义（均P＜0.01)。感染后24、48及72 h，rBCG AE组IFN γ诱生量分别为(1 986±156）pg/mL、（4 687±168）pg/mL、（3 238±97）pg/mL，TNF a诱生量分别为(1 153±48）pg/mL、（5 864±97）pg/mL、（4 129±68)pg/mL，各时间点均显著高于BCG感染组的IFN γ［分别为（1 245±32）pg/mL、（3 067±143）pg/mL、（2 879±186）pg/mL］和 TNF a诱生量［分别为（486±18）pg/mL、（3 237±86）pg/mL、（1 068±74）pg/mL］，差异均有统计学意义（均P＜0.01)。结论rBCG AE可显著增强人巨噬细胞免疫刺激活性，该疫苗可作为替代BCG的候选疫苗，具有进一步开发研究的价值。

关键词： 重组卡介苗 rBCG Ag85A ESAT 6 THP 1细胞 人巨噬细胞 免疫刺激活性 疫苗 结核

Effect of rBCG Ag85A ESAT 6 on immunostimulatory activity of human macrophages

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Abstract:

ObjectiveTo evaluate the effect of recombinant bacillus Calmette Guerin (BCG)rBCG Ag85A ESAT 6（rBCG AE)on immunostimulatory activity of human macrophages, and provide theoretical proof and experimental basis for vaccine use.MethodsThe previously constructed rBCG AE and BCG strains were obtained respectively to infect the THP 1 cells that stimulated by phorbol 12 myristate 13 acetate（PMA）. 24 h,48 h and 72 h after infection, expression of macrophage surface markers CD80 and CD86 were measured by flow cytometry, and the concentration of interferon γ (IFN γ) and tumor necrosis factor a (TNF a) in supernatant were detected with ELISA kit. ResultsAfter four hours culture, phagocytic rate of THP 1 stimulated by PMA was significantly higher than that non stimulated by PMA （［91.26±2.13］% vs ［8.45±1.54］%, P=0.01）； 24 h,48 h and 72 h after infection, the percentages of CD86 positive cells (［32.84±7.13］%, ［48.42±5.46］%, ［39.48±5.67］%) and CD80 posit ive cells (［20.28±1.13%］, ［23.67±1.23］%, ［23.19±1.58］%) in rBCG AE group were obviously higher than those in BCG group (CD86: ［28.17±5.26］%, ［40.09±7.21］%, ［31.26±6.85］%; CD80: ［22.15±1.82］%, ［23.27±1.91］%, ［22.68±0.87］%, P<0.01). 24 h,48 h and 72 h after infection, the concentration of IFN γ (［1 986±156］pg/mL, ［ 4 687±168］ pg/mL, ［3 238±97］ pg/mL) and TNF a(［1 153±48］ pg/mL, ［5 864±97］ pg/mL, ［4 129±68］pg/mL) in rBCG AE group were higher than those in BCG group (IFN γ: ［1 245±32］pg/mL, ［3 067±143］ pg/mL, ［2 879±186］ pg/mL; TNF a: ［486±18］ pg/mL, ［3 237±86］ pg/mL, ［1 068±74］ pg/mL, P<0.01).ConclusionRecombinant BCG AE can enhance immunostimulatory activity of human macrophages, and it is an improved TB vaccine as an alternative to BCG for further study.

Keywords: recombinant bacillus Calmette Guerin rBCG Ag85A ESAT 6 THP 1 cell human macrophage; immunostimulatory activity;vaccine tuberculosis

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