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The antitumor effect of a polysaccharide from *Strongylocentrotus nudus* eggs (SEP) is mediated by stimulating cytotoxic lymphocytes *in vivo*

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Abstract

SEP, a polysaccharide isolated from *Strongylocentrotus nudus* eggs, is a D-glucan containing an α-1,4-linked backbone and α-1,6-linked branches. SEP showed obvious antitumor effects against H22 hepatocellular carcinoma, Lewis Lung cancer (LLC) and human non-small-cell-lung-cancer (NSCLC) in mice. The obtained results indicated that SEP had no inhibitory effect on cancer cells *in vitro,* indicating that its antitumor effect may be related to immunomodulation. In tumor-bearing mice, SEP could not only remarkably enhance splenocyte proliferation, $CD4^+$ and $CD8^+$ T cell numbers as well as cytotoxic lymphocytes (CTLs) activity, natural killer (NK) cell cytotoxity, but also elevated IL-2 and TNF-α secretion as well as IgA, IgM and IgG levels in the serum. In addition, SEP significantly induced Erk phosphorylation and Akt phosphorylation in mouse splenocytes. The transcriptional activity of NFAT in Jurkat T cells was promoted after SEP treatment, indicating that SEP enhanced the transcription and expression of downstream gene IL-2. Pre-incubation with TLR2 and TLR4 blocking antibodies inhibited SEP-induced splenocyte proliferation and IL-2 secretion. Interestingly, the inhibition of H460 growth induced by SEP in nude mice was abrogated by selective depletion of the NK cell population in mice. In conclusion, our study demonstrates that SEP effectively inhibits tumor growth *in vivo via* enhancement of host immune system function, including enhancing the activity of CTLs and NK cells, indicating that SEP could function as a potential immunotherapy drug for cancer therapy.

Biography

Ke Mengyun is a doctor degree candidate and studying in China Pharmaceutical University. Her research has been focused on the immunomodulatory activity of polysaccharides. She has published one paper on European Journal of Pharmacology in 2013 and submitted two papers about the antitumor effects and immunomodulatory mechanisms of *Strongylocentrotus nudus* eggs polysaccharide (SEP).