

## Lactobacillus casei ssp.casei could induce the Th1 cytokine production and Natural Killer cells activity in BALB/c mice bearing invasive ductal carcinoma

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Lactic acid bacteria used as probiotics have ability to modulate immune responses. They have also been shown to affect the immune responses against solid tumors. In the present work, we proposed to study the effects of oral administration of *L.cacessi ssp casei* on the NK cytotoxicity and production of cytokines in spleen cells culture of BALB/c mice bearing invasive ductal carcinoma. Two groups of female mice as test and control each containing 15 mice were used. 2 weeks before tumour transplantation test mice were orally administered by 0.5 ml of PBS containing  $2.7 \times 10^8$  CFU/ml of *L.casei*. Administration was followed 3 weeks after transplantation with 3 days interval. Control mice received an equal volume of PBS in a same manner. Results showed that *L. casei* significantly increased the production of IL-12 and IFN- $\gamma$  and increased the NK cytotoxicity. The growth rate of tumor in the test mice was decreased and survival rate of them significantly raised in comparison to the controls. Our findings suggested that daily intake of *L.casei* can improve the production of IL-12 and IFN- $\gamma$  and motivate the NK cytotoxicity, but further studies are needed to investigate the other mechanisms of these effects.