Bioactive stilbenoids including resveratrol are characterized as the secondary metabolites biosynthesized by the germinating peanut kernels. After germination for an appropriate period, the germination-enhanced peanut kernels were further processed by heat treatment, grinding and defatting in preparation of bioactive peanut sprout powder (BPSP). In assessment of immune functions of dietary BPSP, 8-wk-old BALB/c mice were fed with diets supplemented with various levels of BPSP. Based on effectiveness of mitogen-activated cell proliferation of the spleen lymphocytes and cytokines secretion, a dose-dependent increase on immunomodulatory activity was observed. In further purification and isolation of arachidin-1, one of the most potent antioxidant stilbenoids ever tested, and subjection to oral administration with mice by various doses, arachidin-1 was effective in enhancement of immune functions.