

Certain food components possess immunomodulatory effects. The aim of this study was to elucidate the mechanism of the immunostimulatory activity of *Brassica rapa* L. We demonstrated an enhancement of natural killer (NK) activity and interferon (IFN)- γ production in mice that were orally administered an insoluble fraction of *B. rapa* L. The insoluble fraction of *B. rapa* L. significantly induced IFN- γ production in mouse spleen cells in an interleukin (IL)-12-dependent manner, and NK1.1⁺ cells were the main cells responsible for producing IFN- γ . Additionally, the results suggested that the active compounds in the insoluble fraction were recognized by Toll-like receptor (TLR) 2, TLR4, and C-type lectin receptors on dendritic cells, and they activated signaling cascades such as MAPK, NF- κ B, and Syk. These findings suggest that *B. rapa* L. is a potentially promising immuno-improving material, and it might be useful for preventing immunological disorders such as infections and cancers by activating innate immunity.

Active compounds in the insoluble fraction of *Brassica rapa* L. induces IFN- γ production in a IL-12-dependent manner and enhancement of NK activity.