Phytoestrogenic Activity of Resveratrol and Peanut Arachidin-1.

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High estrogen level is correlated to increased circulating CD4+CD25+ regulatory T cells in mediating immunohomeostasis. Resveratrol possesses phytoestrogenic property exhibiting a variety of immunosuppressive activities, including suppression on T cells proliferation, enhancement of IL-10 generation, and retarding autoimmune diseases. In this study, resveratrol (Res) and peanut arachidin-1 (Ara) were subjected to comparison with 17-β-estradiol (E2) on CD4+CD25+ Tregs population and immunosuppressive activity of ConA activated T cell repertories of splenocytes or thymocytes. Ratios of CD4+CD25+ cell population in ConA activated T cell repertories were not affected by pre-incubation with Res, Ara or E2 measured by flow cytometry. Immunosuppressive related molecules, CTLA-4, FoxP3, IL-10 and TGF-β were upregulated by Ara, Res and E2. Inhibitory effects of Ara and Res and E2 on ConA activated lymphocytes proliferation were recovered by estrogen receptor blocker, tamoxifen. When low (L-S-PNT) and high (H-S-PNT) levels bioactive peanut sprout powder fortified diets were provided ad libitum to 6 mo-old CD-1 mice for 48 wks, their circulating CD4+CD25+ Tregs populations were assessed, and gene expressions of CTLA-4 and TGF-β of magnetic beads enriched Tregs were significantly (P < 0.05) elevated as assessed via semi-quantitative RT-PCR.