

Japanese traditional soy sauce alleviated allergy responses by suppressing differentiation of mucosal mast cell.

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Allergy is a critical problem of public health. Food allergy is no exception; the incidence of food allergy has been increasing in the developed countries including Japan, where the prevalence doubled in school age children during the last decade. However the reason is still unclear. Life style in Japan, especially food custom, significantly changed to western style during last century. We focused on the relationship of traditional Japanese foods and allergy, and found that consumption of Japanese soy sauce showed inverse correlation with allergy prevalence in Japan. According to this fact, we designed a experiment. Allergy model mice were fed with de-salt soy sauce one week before allergy inducing until the end of allergy induction. We found that prevalence of food-induced allergic diarrhea decreased in soy treated group. And Th2 cytokine production in small intestinal lamina propria cells was suppressed in soy sauce treated group. In addition, MMCP-1 level in serum significantly decreased after allergen challenge. MMCP-1 is a specific marker of mucosal mast cell (MMC), which is a critical cell population of allergy responses. Further, we found that reduction of MMCP-1 was due to decrease MMCP-1 expression of MMC in soy sauce treated mice. We then added soy sauce into in vitro MMC differentiation culture system, and found that MMCP-1 expression significantly suppressed by a concentrate dependent manner. It indicated that mucosal mast cell differentiation was impaired by soy sauce. Our data suggests that soy sauce derived factor(s) could alleviate allergy responses by suppressing MMC differentiation. We hope that further research about investigating these facts could promote understanding of tradition oriental food custom.