Influence of cyclophosphamide on L-Asparaginase-induced allergy in animal model

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L-Asparaginase (L-ASP), a key drug in the treatment of childhood acute lymphoblastic leukemia, often causes allergies. We have reported animal and *in vitro* models of L-ASP allergy. In this study, we examined the effect of cyclophosphamide (CY) which reportedly impair the functions of Treg cells on L-ASP allergy.

Male BALB/c mice were sensitized by L-ASP with $Al(OH)_3$ gel on days 1 and 15. Then, the right ears of the mice were i.d. sensitized by L-ASP. CY was i.p. injected on days −1 and 13. The serum were collected on 27. Total IgE level in the serum were measured by ELISA. RBL-2H3 cells were sensitized by the serum and stimulated by L-ASP to determine β-hexosaminidase (β-Hex) release *in vitro*.

L-ASP sensitization increased serum IgE level, which was enhanced by CY at 150 mg/kg. When RBL-2H3 was sensitized L-ASP-allergic mice serum *in vitro*, L-ASP stimulated β-Hex release from the cells. The serum of CY-treated mice induced higher β-Hex release than normal. Anti-IgE Ab inhibited allergic β-Hex release both *in vitro* and *ex vivo*.

From these results, it was concluded that (1) Anti-IgE Ab can be a candidate for the treatment of L-ASP allergy, (2) CY suppressed Treg function, which may enhance Th2 response so as to augment L-ASP allergy. We plan to measure the levels of some cytokines in the animal model of L-ASP allergy.