Molecular characterization of buckwheat major immunoglobulin E-reactive proteins in allergic patients

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Buckwheat extract was analyzed by immunoblotting experiments using sera from nine allergic and three non-allergic individuals. Major IgE-reactive bands were 73, 70, 62, 58 and 54 kDa under non-reducing conditions and were detected in allergic subjects, but not in non-allergic ones. Under reducing conditions, the 73, 70, 62 and 58 kDa bands split to 56 and 24, 52 and 24, 45 and 24, and 43 and 24 kDa, respectively. The 24 kDa molecule was the most prominent band recognized with IgE as well as IgG or IgA. The FA02 cDNA clone, encoding the α and β subunits of the legumin-like storage protein, was isolated from a cDNA library made of immature buckwheat seeds. The deduced amino acid sequence of the cDNA clone is substantially identical to the N-terminal amino acid sequence of the 24 kDa molecule, which may be identical to that of BW24KD reported by Urisu et al. Consistent with these results, the translation product of the cDNA encoding the putative β subunit was strongly recognized with serum IgE, IgG and IgA from buckwheat-allergic patients. These results suggested that the 24 kDa molecule may be the β subunit of the legumin-like storage molecule of buckwheat.

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