



Grades of 43 Fish Species in Japan Based on IgE-binding Activity

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Background: Hypersensitivity reactions to fish are a common food allergy, but IgE-binding activity to fish species have not been fully elucidated. The aim of this study was to identify fish with high binding activity to IgE in sera from Japanese fish-hypersensitive individuals.

Methods: 38 children with a history of at least one episode of hypersensitivity after ingestion of fish were enrolled and 34 children with no history of reactions and negative IgE results for at least five kinds of fish antigen were included as controls. Using a radioallergosorbent test, we examined IgE-binding to each fish species using sera from fish-hypersensitive subjects. Fish were then graded according to IgE-binding activity.

Results: Many fish species, including red salmon, silver salmon, yellowfin tuna, big eyed tuna, Atlantic tuna, saurel, skipper, yellowtail, Japanese sardine, bonito and mackerel had high IgE-binding activity. All of these fish are abundantly consumed in Japan. The hypersensitivity reactions experienced by many subjects occurred after ingestion of species with high IgE-binding activity. Only halibut (Osteichthyes) and sharks (Chondrichthyes) had low IgE-binding activity.

Conclusions: A correlation was observed between IgE levels and expression of symptoms after fish ingestion. High consumption of salmon, tuna, scad (including saurel), skipper, yellowtail, sardine, bonito and mackerel in Japan might be the cause of the high IgE-binding activity of these species. The grades of fish species consumed widely in Japan are likely to be useful for nutritional instruction of fish-allergic patients.

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