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Pediatric Fish Allergens: A Pilot Study

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Background: Fish is one of the top 8 most common food allergies in children. The main fish allergen, parvalbumin (10-12 kDa), was discovered first in codfish and cross-reactivity among fish species is common. Studies have shown, however, that patients may be allergic to some fish species while tolerating other species. **Objectives:** To investigate fish proteins across a range of commonly consumed species to discover potential new allergens. **Methods:** We isolated protein extracts from raw fish species that represent 8 different biologic orders of commonly consumed fish. Immunoblotting with fish-allergic patients' sera was performed to examine IgE binding patterns to protein bands. Results of skin prick testing (SPT) and fish-specific IgE levels were also collected. **Results:** Twenty-two subjects were enrolled, 14 fish-allergic and 8 fish-tolerant. The mean age was 5.2 years and 75% were male. IgE binding to six potentially allergenic proteins were found in four different fish, which were absent in fish-tolerant subjects. These included catfish (158 kD; $p < 0.005$, 70 kD; $p < 0.007$, and 20 kD; $p < 0.029$), grouper (20kD; $p < 0.02$), snapper (30 kD; $p < 0.07$), and mackerel (78 kD; $p < 0.03$). **Conclusion:** Significant fish protein bands binding IgE were found in fish-allergic but not fish-tolerant subjects. These fish protein bands have not yet been discovered and could further help explain fish allergy cross reactivity between species.