

INTISARI

Alergi makanan merupakan kondisi hipersensitivitas terhadap antigen makanan yang dapat memicu gejala klinis ringan hingga berat yang dapat mengancam jiwa, sehingga diperlukan diagnosis alergi yang tepat. Namun, informasi mengenai alergen lokal Indonesia masih terbatas. Ikan tongkol (*Euthynnus affinis*) dan wader (*Rasbora argyrotaenia*) merupakan ikan yang banyak dikonsumsi di Indonesia dan diketahui secara empiris dapat menyebabkan alergi. Namun, penelitian terkait karakterisasi protein serta informasi reaksi silangnya terhadap komponen makanan penyebab alergi lain masih terbatas. Sehingga, pada penelitian ini dilakukan karakterisasi protein ikan tongkol dan wader, serta kemungkinan reaksi silangnya terhadap protein udang yang merupakan komponen makanan yang umum menyebabkan alergi.

Pengujian diawali dengan ekstraksi protein ikan wader, tongkol, dan udang menggunakan larutan pengekstrak yang mengandung protease inhibitor. Kadar protein diukur menggunakan metode Bradford. Analisis profil protein dilakukan dengan menggunakan SDS-PAGE pada sampel dengan dan tanpa pemanasan 100°C selama 20 menit. Uji reaksi silang protein sampel terhadap antibodi anti-tropomyosin udang dan serum penderita alergi udang dilakukan menggunakan metode ELISA pada variasi perlakuan protein tanpa dan dengan pemanasan 100°C selama 20 menit.

Kadar protein total udang, ikan wader, dan tongkol yang diperoleh masing-masing adalah sebesar 2.6, 2.6, dan 2.9 mg/ml. Analisis SDS-PAGE menunjukkan profil pita protein antara 10-245 kDa pada sampel ikan wader, tongkol dan udang dengan maupun tanpa pemanasan. Selain itu, pada ketiga sampel didapatkan protein tahan panas pada kisaran 36-38 kDa yang diperkirakan sebagai tropomyosin. Uji reaksi silang menunjukkan adanya pengenalan protein ikan wader dan tongkol oleh antibodi anti-tropomyosin udang, serta adanya reaksi silang protein sampel dengan serum penderita alergi udang baik pada kondisi dengan maupun tanpa pemanasan. Sehingga, dapat disimpulkan bahwa protein ikan wader dan tongkol memiliki kemiripan profil protein dengan udang khususnya pada protein kisaran 36-38 kDa, serta adanya reaksi silang terhadap antibodi yang mengenali protein udang, baik pada kondisi dengan maupun tanpa pemanasan.

Kata Kunci: Alergi, Reaksi silang, Wader (*Rasbora argyrotaenia*), Tongkol (*Euthynnus affinis*), Udang

ABSTRACT

Food allergy is a condition of hypersensitivity to food antigens that can trigger mild to severe clinical symptoms that can be life-threatening, so a proper allergy diagnosis is needed. However, information regarding Indonesian local allergens is still limited. Mackerel tuna (*Euthynnus affinis*) and wader (*Rasbora argyrotaenia*) are fish that are widely consumed in Indonesia and are known empirically to cause allergies. However, research related to the characterization of proteins and information on their cross-reaction to food components that cause other allergies is still limited. Thus, in this study, the protein characterization of mackerel tuna and waders was carried out, as well as the possibility of their cross-reaction to shrimp protein, which is a common food component that causes allergies.

The test begins with protein extraction of wader fish, mackerel tuna, and shrimp using an extractor solution containing a protease inhibitor. Protein levels were measured using the Bradford method. Protein profile analysis was carried out using SDS-PAGE on samples with and without heating at 100°C for 20 minutes. The cross-reaction test of the sample protein against shrimp anti-tropomyosin antibody and shrimp allergy serum was carried out using the ELISA method on various protein treatments without and with heating at 100°C for 20 minutes.

The total protein content of shrimp, wader fish, and mackerel tuna obtained were 2.6, 2.6, and 2.9 mg/ml, respectively. SDS-PAGE analysis showed protein band profiles between 10-245 kDa in wader, mackerel tuna, and shrimp samples with and without heating. In addition, in the three samples, a heat-stable protein in the range of 36-38 kDa was found which was thought to be tropomyosin. The cross-reaction test showed the recognition of wader and mackerel tuna proteins by shrimp anti-tropomyosin antibodies, as well as the cross-reaction of sample protein with the serum of shrimp allergy sufferers both in conditions with and without heating. Thus, it can be concluded that wader and mackerel tuna proteins have similar protein profiles to shrimp, especially in the protein range of 36-38 kDa, and there is a cross-reaction to antibodies that recognize shrimp protein, both under and without heating.

Keywords: Allergy, Cross-reaction, Wader (*Rasbora argyrotaenia*), mackerel tuna (*Euthynnus affinis*), Shrimp