

INTISARI

Alergi makanan merupakan salah satu masalah kesehatan dengan pravelensi kejadian global mencapai 35% mayoritas didominasi oleh anak-anak dan remaja. Alergi makanan menyebabkan beberapa manifestasi klinik seperti masalah kulit, pernafasan, pencernaan, syok anafilaksis hingga kematian. Deteksi terhadap alergi makanan perlu dilakukan terutama alergen lokal. Sehingga dilakukan eksplorasi sumber alergen lokal Indonesia. Secara empiris dan beberapa penelitian menunjukkan ikan *A.urotaenia* dan ikan *M. albus* memiliki potensi sebagai sumber alergen. Tujuan penelitian ini adalah untuk mengetahui profil protein total, *heat stability*, reaksi silang dengan protein tropomysin dan reaksi silang dengan serum (*IgE*) penderita alergi makanan udang ekstrak ikan *A. urotaenia* dan *M. albus*.

Sampel ikan *A. urotaenia* dan *M. albus* diperoleh dari pasar sentra ikan wilayah Yogyakarta. Proses ekstraksi protein total menggunakan larutan kit ekstraksi. Pengukuran kadar protein total ditetapkan dengan metode *Bradford* kemudian dilakukan analisis menggunakan teknik elektroforesis SDS-PAGE. Hasil ekstrak protein selanjutnya diujikan pada kondisi tanpa dan dengan pemanasan untuk melihat karakteristik profil protein (*Heat Stability*), hasil identifikasi dilanjutkan pengujian reaksi silang antara antibodi *tropomysin* dengan ekstrak protein ikan *A. urotaenia* dan *M. albus* menggunakan teknik ELISA. Uji selanjutnya dilakukan pengujian reaksi silang *IgE* serum penderita alergi udang dengan ekstrak protein menggunakan ELISA.

Hasil penelitian ini menunjukkan adanya perbedaan pengaruh efek pemanasan terhadap kadar protein total sampel. Kadar protein total *A. urotaenia*, *M. albus* dan *P monodon* menunjukkan penurunan setelah pemberian pemanasan. Analisis SDS-PAGE menunjukkan profil pita protein tahan panas didominasi pada protein dengan bobot molekul <50kDa. Sampel ikan diprediksi memiliki kemiripan protein dengan *P monodon* yaitu *myosin heavy chain* (>200 kDa), *enolase* (50 kDa), *arginine kinase* (41 kDa), *tropomyosin* (36 kDa), *triosephosphate isomerase* (28 kDa), *myosin light chain* (14 kDa), *troponin-c* (14 kDa), dan *glyceraldehyde-3-phosphate dehydrogenase* (14 kDa). Hasil pengujian didapatkan protein total *A. urotaenia* dan *M. albus* dapat berikatan dengan antibodi anti *tropomyosin* udang dan dapat bereaksi silang terhadap serum (*IgE*) penderita alergi udang pada kondisi dengan dan tanpa pemanasan.

Kata Kunci: Alergi, Reaksi Silang, *Tropomyosin*, *Ambassis urotaenia*, *Monopterus albus*

Abstract

Food allergies are one of the most common health problems with a global prevalence of 35% and a majority of children and adolescents. Food allergies cause several clinical manifestations such as skin problems, respiratory, digestion, and anaphylactic. Detection of food allergies needs to be done, especially local allergens. In this research we explored the local source of allergens in Indonesia. Empirically some studies suggest that *A. urotaenia* and *M. albus* fish have potential as sources of allergens. This study is to find out the characteristic profile of total protein, heat stability, cross-reaction with tropomyosin protein, and cross-reaction with serum (IgE) food allergy of shrimp.

Samples of *A. urotaenia* and *M. albus* fish were obtained from the Yogyakarta fish center market. The measurement of total protein levels was determined by the Bradford method and then analyzed using the SDS-PAGE electrophoresis technique. The result of the protein extract characteristics was subsequently tested in conditions without and with heating (Heat Stability), Identification results continued cross-reaction testing between tropomyosin antibodies with fish protein extract *A. urotaenia* and *M. albus* using the ELISA technique. Tests were followed test cross-reaction IgE serum allergy shrimp with protein extracts with ELISA.

The results of this study showed a difference in the effect of the heating effect on the total protein levels of the sample. Total protein levels of *A. urotaenia*, *M. albus* and *P. monodon* showed a decrease after heating. SDS-PAGE analysis showed that heat-resistant protein tape profiles were dominated by proteins with molecular weights <50kDa. The predicted fish samples had protein similarities with *P. monodons* namely *myosin heavy chain* (>200 kDa), *enolase* (50 kDa), *arginine kinase* (41 kDa), *tropomyosin* (36 kDa), *triosephosphate isomerase* (28 kDa), *myosin light chain* (14 kDa), *troponin-c* (14 kDa), dan *glyceraldehyde-3-phosphate dehydrogenase* (14 kDa). The test results showed that the total proteins *A. urotaenia* and *M. albus* can bind to anti-tropomyosin antibodies of shrimp and can cross-react to the serum (IgE) of allergic shrimp in conditions with and without heating.

keywords: Allergy, Cross-reaction, *Tropomyosin*, *Ambassis urotaenia*, *Monopterus albus*