

Karakterisasi kandidat protein alergen serbuk sari kelapa sawit *elaeis guineensis* jacq serta pengujian aktivitasnya terhadap produksi iga ige igg igm dan ifn gamma pada peripheral blood mononuclear cell pbmc secara in vitro = Characterization of protein allergen candidate from oil palm *elaeis guineensis* jacq pollen and its activities to iga ige igg igm and ifn gamma production in peripheral blood mononuclear cell pbmc by in vitro

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Abstrak

**ABSTRAK**

Kelapa sawit merupakan tanaman perkebunan yang banyak dibudidayakan di Indonesia, dengan luas sekitar 11 juta hektar pada tahun 2014. Serbuk sari kelapa sawit memiliki potensi alergi yang cukup besar, karena memiliki ukuran relatif kecil, berjumlah relatif banyak, dan bersifat anemofili.

Penelitian ini bertujuan untuk mengetahui karakter kandidat protein alergen serbuk sari kelapa sawit melalui metode SDS-PAGE dan Western Blotting, serta mengetahui aktivitas IgA, IgE, IgG, IgM, dan IFN- $\gamma$ ; pada sel Peripheral Blood Mononuclear Cell (PBMC) terhadap induksi protein serbuk sari kelapa sawit yang dilakukan secara in vitro. Penelitian diawali dengan ekstraksi protein serbuk sari kelapa sawit, yang berasal dari beberapa wilayah di Indonesia. Berat molekul protein dianalisis dengan metode SDS-PAGE, serta uji kealergenikan kandidat protein alergen diuji dengan menggunakan 21 serum pasien alergi melalui metode Western Blotting. Protein serbuk sari kelapa sawit juga diinduksikan pada kultur sel PBMC. Proses pendeteksian IgA, IgE, IgG, IgM, dan IFN- $\gamma$ ; dilakukan menggunakan metode ELISA. Berat molekul protein serbuk sari kelapa sawit diketahui berukuran 10-80 kDa.

Hasil uji kealergenikan protein tersebut pada Western Blotting menunjukkan kandidat protein alergen memiliki ukuran 14 kDa, 15 kDa, 20 kDa dan 31 kDa. Aktivitas beberapa immunoglobulin dan sitokin berhasil terdeteksi. Konsentrasi IgA didapatkan sebesar 0,022 pg/ml, IgE sebesar 9,655 pg/ml, IgG sebesar 39,856 pg/ml, IgM sebesar 10,369 pg/ml, dan IFN- $\gamma$ ; sebesar 2.617,240 pg/ml.

**ABSTRACT**

Oil palm is a plant that widely cultivated in Indonesia, with an area of about 11 million hectares in 2014. Oil palm pollen is potential to caused allergy, because it has a small size, much in amount, and was dispersed by wind.

This study aims to determine the character of the allergen protein candidate from oil palm pollen by using SDS-PAGE and Western Blotting, and also to know the activity of IgA, IgE, IgG, IgM, and IFN- $\gamma$ ; against exposure to oil palm pollen protein performed in vitro on Peripheral Blood Mononuclear Cell (PBMC). The study begins with the protein extraction from oil palm pollen, which is derived from several regions in Indonesia. The molecular weight of these proteins are analyzed using SDS-PAGE. Allergenic test of allergen protein candidates were tested using 21 serum of allergic patients through Western Blotting

method. Oil palm pollen protein also induced in PBMC cultures. The detection of IgA, IgE, IgG, IgM, and IFN- $\gamma$ ; were performed using ELISA. The molecular weight of oil palm pollen protein is about 10780 kDa.

Allergenic test results through Western Blotting showed the allergen protein candidates have a size of 14 kDa, 15 kDa, 20 kDa and 31 kDa. Immunoglobulin and cytokine activity successfully detected. The IgA concentrations obtained 0.022 pg/ml, IgE obtained 9.655 pg/ml, IgG obtained 39.856 pg/ml, IgM obtained 10.369 pg/ml, and IFN- $\gamma$ ; obtained 2,617.240 pg /ml.</i>