Analisis Profil Protein Urine Subjek Tuberkulosis, sebagai Studi Awal Penentuan Marka Protein Tuberkulosis dengan Metode SDS-PAGE = Analysis of Urine Protein Profile from Tuberculosis Subjects, as a Preliminary Study in Determining Tuberculosis Protein Markers using SDS-PAGE

Balqis Jihaan Nabila Budi, author

Abstrak

Tuberkulosis (TB) merupakan penyakit infeksi yang disebabkan bakteri Mycobacterium tuberculosis dan dapat menyerang paru-paru serta organ lainnya. Sesuai dengan ketentuan target product profiles (TPP) TB gagasan World Health Organization (WHO), diperlukan pengembangan alat tes cepat penunjang yang dapat mendeteksi berbagai jenis kasus TB menggunakan sampel alternatif, salah satunya berupa urine. Tujuan penelitian ini adalah memperoleh informasi dasar terkait profil protein urine kelompok TB dan kelompok sehat melalui metode separasi protein sodium dodecyl sulphate- polyacrylamide gel electrophoresis (SDS-PAGE), sebagai langkah penelitian awal penentuan marka protein TB. Metode penelitian diawali dengan pooling sampel urine subjek terkonfirmasi TB Paru (5), TB Ekstra-paru (5), TB-HIV (5), dan TB Klinis (5), serta lima subjek sehat sesuai kelompok. Isolasi protein dan SDS-PAGE dilakukan terhadap pooling sampel tersebut, dilanjutkan dengan pewarnaan coomassie brilliant blue, serta analisis profil protein hasil SDS-PAGE menggunakan ImageJ. Profil protein kelompok sehat dan empat kelompok TB menunjukkan perbedaan jumlah dan intensitas pita protein yang terekspresi. Kelompok TB-HIV memiliki 12 pita protein terekspresi dengan intensitas pita protein yang tinggi dibandingkan dengan kelompok TB lain maupun kelompok sehat. Kelompok sehat hanya memiliki satu pita protein terekspresi pada kisaran berat molekul 66,01 kDa. Sementara, hampir seluruh kelompok TB menunjukkan keseragaman protein yang tampak pada kategori pita protein berberat molekul menengah dan rendah. Terdapat tiga pita protein yang memiliki keseragaman pada keempat profil kelompok TB dengan intensitas dan konsentrasi terestimasi yang cukup tinggi, yaitu pita dengan berat molekul 52,83±56,31kDa, 48kDa, dan 23,8±24,57kDa. Melalui metode SDS-PAGE, profil protein urine kelompok sehat dan kelompok TB dapat diamati dengan keseragaman pita terekspresi pada kelompok TB yang juga berpotensi dalam penemuan marka protein TB yang inklusif. Untuk penelitian selanjutnya perlu dilakukan langkah identifikasi protein pada pita protein yang memiliki keseragaman.

.....Tuberculosis is an infectious disease caused by Mycobacterium tuberculosis which can cause infection in lungs and various other organs. In accordance with the provisions from WHO TB target product profiles (TPP), it is necessary to develop a rapid test that could detect various types of TB cases using an alternative sample, urine. The aim of this study was to obtain basic information regarding urine protein profile of TB groups and the healthy group through SDS-PAGE protein separation method, as an initial research step to determine TB protein markers. This research begins with pooling urine samples of confirmed subjects with pulmonary TB (5), extra-pulmonary TB (5), TB-HIV (5), and clinical TB (5), as well as 5 healthy subjects according to groups, after isolation and protein separation using SDS-PAGE, gel was stained using Commassie Brilliant Blue dye, and the end results were analyzed using ImageJ. The urine protein profiles of the healthy group and the four TB groups showed differences in the number, intensity, and estimated

concentration of the expressed protein bands. The TB-HIV group had high-intensity protein expression and was dominantly expressed in the low molecular weight category. The protein profile of TB groups showed uniformity in the intermediate and low molecular weight categories. There are three protein bands that have uniformity in the four profiles of the TB group with fairly high estimated intensity and concentration, namely bands with molecular weights of 52.83±56.31kDa, 48kDa, and 23.8±24.57kDa. Through the SDS-PAGE method, the urine protein profiles of the healthy and TB groups were successfully observed, and the uniformity of protein bands expressed in the TB group also has the potential for the discovery of inclusive TB protein markers. For further research, it is necessary to identify the protein band that has uniformity.