Respons imun humoral dan mediator imun seluler mencit Balb/c terhadap pe11 sebagai kandidat vaksin tuberkulosis = Responses of humoral immune and cellular immune mediators in Balb/c mice to PE11 as a tuberculosis vaccine candidates

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Abstrak

Tuberkulosis (TB) disebabkan oleh infeksi kuman Mycobacterium tuberculosis merupakan satu dari sepuluh penyebab kematian tertinggi di dunia yang dapat dicegah melalui vaksinasi. Vaksin BCG sebagai satu-satunya vaksin TB, memiliki beberapa kekurangan, diantaranya tingkat proteksi yang tidak merata di populasi orang dewasa dan kekhawatiran aplikasinya pada populasi imunokompromais, hal ini mendorong dikembangkannya vaksin TB alternatif. PE11 merupakan protein yang bertanggung jawab dalam rekonstruksi komponen lipid dinding sel M. tuberculosis dan berdasarkan analisis in-siliko diketahui memiliki domain pengenalan terhadap antibodi dan MHC-II. Dalam studi ini, gen pe11 dari M. tuberculosis strain Beijing diinsersikan ke dalam plasmid pcDNA3.1, pcDNA3.1-pe11, yang kemudian diuji kemampuannya dalam menginduksi respon imun humoral dan mediator seluler pada mencit Balb/c sebagai bentuk DNA vaksin. Berdasarkan uji western blot, respon imun humoral berupa IgG spesifik terhadap protein rekombinan PE11-His berhasil dikonfirmasi. Selain itu, mediator imun seluler dari splenosit mencit pasca vaksinasi dan pajanan antigen secara in-vitro menunjukkan adanya peningkatan produksi IL-12, IFN- dan IL-4 dibandingkan dengan kelompok kontrol, namun tidak terhadap sitokin IL-10.
.....Tuberculosis (TB) caused by infection bacteria Mycobacterium tuberculosis, one of ten causes of death in the world that can be prevented through vaccination. The BCG vaccine, as the only TB vaccine, has several drawbacks, including an uneven level of protection in adult population and risk application in immunocompromised population, this has led to the development of an alternative TB vaccine. PE11 is a protein that is responsible for the reconstruction of the lipid component of the cell wall of M. tuberculosis and based on in-silico analysis is known to have the recognition domain for antibodies and MHC-II. In this study, the pe11 gene from the Beijing strain of M. tuberculosis was inserted into the plasmid pcDNA3.1, pcDNA3.1-pe11, then tested for its ability to induce humoral immune responses and cellular mediators in Balb/c mice as a form of vaccine DNA. Based on the western blot test, the specific IgG humoral immune response to the recombinant protein PE11-His was confirmed. In addition, cellular immune mediators from post-vaccination mice splenocytes and in-vitro antigen exposure showed increased production of IL-12, IFN- and IL-4 compared to the control group, but not to the IL-10 cytokine.