

Kloning dan ekspresi gen alfa 11 giardin *Giardia lamblia*

INTISARI

Diare dapat terjadi pada manusia dan hewan. Penyebab penyakit ini antara lain bakteri, virus dan parasit. *Giardia lamblia* merupakan salah satu parasit penyebab diare. *Giardia lamblia* mempunyai protein imunogenik yang dapat dikembangkan untuk alat diagnostik yaitu gen alfa-11 giardin. Protein alfa-11 giardin dapat diproduksi dengan amplifikasi alfa-11 giardin dan menyisipkan gen pada vektor ekspresi pET SUMO.

Penelitian ini bertujuan untuk mengamplifikasi gen alfa-11 giardin, dan mendapatkan ekspresi protein alfa 11 giardin pada *E. coli* BL 21 (DE3). Penelitian dimulai dengan isolasi DNA *Giardia lamblia* yang akan diamplifikasi untuk mendapatkan gen alfa giardin dengan menggunakan metode PCR, kemudian hasil PCR diligasi ke vektor pET SUMO serta ditransformasi ke *E. coli* BL 21 (DE3). Hasil transformasi *E. coli* BL 21 (DE3) dilanjutkan untuk produksi protein rekombinan alfa-11 giardin. Hasil amplifikasi gen penyandi alfa-11 giardin dengan menggunakan metode PCR didapatkan pita/band spesifik alfa-11 giardin dengan ukuran 924 bp, kemudian hasil PCR berhasil disisipkan ke vektor pET SUMO serta diekspresikan ke *E. coli* BL 21 (DE3).

Hasil amplifikasi sampel menunjukkan hasil positif alfa-11 giardin dengan adanya band dengan panjang 924 bp. Hasil kloning dilanjutkan dengan produksi protein rekombinan gen alfa giardin dengan induksi IPTG. Hasil SDS-PAGE menunjukkan alfa giardin terekspresi pada *E. coli* BL 21 (DE3) dengan berat molekul 48 kDa yang merupakan berat molekul dari protein rekombinan yang terfusi dengan pET SUMO.

Kata Kunci : *Giardia lamblia*, gen alfa-11 giardin, kloning, ekspresi

Cloning and Expression alpha-11 giardin gene *Giardia lamblia*

ABSTRACT

Diarrhea can infect to human and animals. It is caused by bacteria, virus, and parasite. *Giardia lamblia* is one of common parasite that can cause diarrhea. *Giardia lamblia* had immunogenic protein that was called alpha-11 giardin. It is can be developed to diagnostic tools of *Giardia lamblia*. It was very potential for next diagnostic tools of giardiasis. Alpha-11 giardin gene can be produced by amplified alpha-11 giardin gene and insert to pET SUMO vector expression.

This study aimed to amplify alpha-11 giardin gene, and to express alpha-11 giardin gene in *E. coli* BL21 (DE3). Positive samples of *Giardia lamblia* were isolated for genomic DNA. Then the alpha-11 giardin gene were amplified by using the PCR, PCR products were inserted to the vector pET SUMO and expressed into *E. coli* BL21 (DE3). Results of the transformation of *E. coli* BL21 (DE3) continued with the production of recombinant proteins Alpha giardin.

Alpha-11 giardin gene that was amplified using PCR method obtained the band specific alpha giardin to the size of 924bp, then the results of PCR successfully ligated into the plasmid vector pET SUMO and transformed into *E. coli* BL21. Results were grown to the media transformation Luria Bertani (LB) containing kanamycin and showed bacterial colonies growing on LB medium and the growth of bacteria in rekultur liquid LB. Insert genes test using the PCR method showed positive results in the presence of a long band with 924 bp. Cloned followed by the production of recombinant proteins Alpha giardin with IPTG induction. Isolated in the supernatant and pellet were analyzed by using SDS-PAGE, SDS-PAGE results showed a band on pellets with a molecular weight of 48 kDa which is the molecular weight of the recombinant protein fused alpha giardin with SUMO.

Keywords : *Giardia lamblia*, alpha-11 giardin gene, cloning, expression