Experimental Studies on murF protein from *Wolbachia* endosymbiont of *Brugia malayi*

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Abstract

Lymphatic filariasis (LF) is a debilitating tropical disease associated with lymphatic system that affects over a hundred million people worldwide. LF is mainly caused by three species of filarial worms – *Wuchereria bancrofti, Brugia malayi* and *Brugia timori*, transmitted by multiple species of mosquitoes. Treatment options for this disease are limited and also available drugs are effective in larval stage only and completely ineffective against the adult worm. Resistance has also been reported for the available drugs; therefore, it is imperative to identify new potential antifilarial drug that have better prognostic features and short period of the usage of drug and effective to inhibit adult worm survival. UDP-N-acetylmuramoyl-tripeptide--D-alanyl-D-alanine ligase (murF) is vital target involved in the peptidoglycan biosynthesis for cell wall formation and catalyzes the final step in the synthesis of UDP-N-acetylmuramoyl-pentapeptide, the precursor of peptidoglycan. The recombinant pET28a^{+} vector containing murF gene (wbm0238) was transformed into *Escherichia coli* BL21 (DE3) cells. And the cells were induced to over-express using 1mM concentration of IPTG for large scale protein production. Targeted protein was purified using Affinity and Size Exclusion Chromatography. Purity of the targeted protein (murF) was analyzed by 10% SDS-PAGE and Western-blot techniques. Finally, the purified 10 mg/ml of protein was subjected to crystallization process. Optimization and standardization of crystal condition is under progress.

Keywords: *Brugiamalayi*, murF,IPTG, Affinity chromatography.

Acknowledgment: Authors greatly express their sincere gratitude to DST-FIST (SR/FST/LSI-667/2016) (C), DST-PURSE Phase-II (No. SR/PURSE Phase 2/38 (G), 2017), DST SERB/EMR/2016/000498 dt 26.09.2016, UGC- Innovative F.No. 14-13/2013 (Inno/ASIST) dt: 30.03.213. DAE-BRNS (35/14/02/2018-BRNS/35009), UGC-RA (No. F. 30-32/2016(SA-II) dt 18.04.2016), and MHRD-RUSA 2.0 (F.24-51/2014-U, Policy (TNMulti-Gen), Dept. of Edn. Govt. of India, Dt.09.10.2018); MOST 107-2923-B-213-001-MY3 and MOST 108-2311-B-213-001-MY3 to Dr. Chun-Jung Chen from Taiwan.