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Identification of aptamer-based potent inhibitors against *Mycobacterium tuberculosis* acetohydroxyacid synthase

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Mycobacterium tuberculosis AHAS is a potential and promising candidate in the development of novel anti-tuberculosis drugs. Acetohydroxyacid synthase (AHAS) from *M. tuberculosis* is one of the biosynthetic enzymes, which catalyzes the first common step in the biosynthesis of the essential branched chain amino acids (BCAA's: valine, leucine, and isoleucine). Aptamers are single-stranded nucleic acid molecules that can fold into complex three-dimensional shapes, forming binding pockets and clefts for the specific recognition and tight binding of any given molecular target, from metal ions and small chemicals to large proteins and higher order protein complexes, whole cells, viruses, or parasites. Aptamers are selected by in vitro process known as systematic evolution of ligands by exponential enrichment (SELEX).

In this study, an *in vitro* selection method, SELEX, was used to find single-stranded DNA aptamer towards *M. tuberculosis* AHAS. We found twelve ssDNA aptamers against *M. tuberculosis* AHAS through *in vitro* selection by SELEX. Among these aptamers, 3 aptamers of the biotinylated modified demonstrated higher binding affinity determined by aptamer-based ELISA method. One of the aptamer showed inhibitory action against *M. tuberculosis* AHAS. This study would further be useful in discovering and producing novel class of aptamer-based inhibitors.

Biography

Moon-Young Yoon has completed his Ph.D. from University of North Texas and postdoctoral studies from UCLA Molecular Biology Institute. He has published more than 150 papers in reputed journals and has been serving as an editorial board member of repute.

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