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Title:	Synthesis, characterization and photoisomerization studies of water-soluble photoswitchable probes for bioconjugation
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Abstract:	Azobenzene are photoswitchable molecules with widespread application in various fields ranging from materials to pharmacology. The introduction of five-membered heterocyclic rings in azo compounds: azoheteroarenes further increases the photoisomerization efficiency and stabilizes the cis isomer. Introduction of substitutions on the heterocyclic ring affects the Z isomer configuration and conformation, which in turn can be utilized to tune thermal stability. Azopyridinium compounds are known to have high thermal relaxation rate and are mainly used for applications that require fast switches as in optical devices. This ionic compound being water-soluble can be potentially utilized for biological applications. This would require improving their cis-state stability. This project aims at synthesis of azopyridine and azopyridinium photoswitches with various alkyl and phenyl substitution on the heterocyclic pyrazole ring at various positions to tune the cis-state stability. The quarternization of azopyridine compounds are done using propargyl bromide to incorporate terminal alkyne group in the molecule. This alkyne functionality is intended to facilitate click reactions which are well-known for their bioconjugation approaches.
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