**Infectious Diseases: Vinylsulfones as Covalent-Reversible Cysteine-Protease-Inhibitors**

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Cysteine proteases play vital roles for the life cycles, nutrition and pathogenesis of a variety of para-sites causing infectious tropical diseases (e.g. Leishmaniasis, sleeping sickness). MM and QM/MM cal-culations have proposed substituted vinyl-sulfones which should be able to form a covalent, but reversible bond with the cysteine sulfur of the protease’s active site. Choosing suitable substituents and leaving groups we found thermoneutral or slightly endergonic vinylic substitutions of addition reactions. In addition to enzyme assays we perform real-time reaction monitoring by NMR and IR.