OBJECTIVE

Thiosemicarbazide and their derivatives represent a group of compounds which possess a wide spectrum of biological activities. Now-a-days increased interest is shown on thiosemicarbazones, mechanistic aspects of their reactions in solutions and their relative conformations with particular reference to their antibacterial and antifungal activities.

The present investigation is aimed at synthesizing a series of variously 3-substituted piperidin-4-one thiosemicarbazones and to study the kinetics of their oxidation by Chloramine-T in aqueous acetic acid medium in the presence of perchloric acid with a view to propose a suitable mechanism, derive rate law and to correlate the reactivities of these substrates with their structures.

Microbial screening tests for the piperidin-4-one thiosemicarbazones synthesised has also been attempted on few selected bacteria and fungi to study their antibacterial and antifungal activities. It is also thought fit to synthesise some 3-substituted N-nitroso piperidin-4-one thiosemicarbazones and have a conformational analysis using various physicochemical studies like IR, $^1$HNMR,
\(^{13}\)CNMR, Spin Echo Fourier Transform (SEFT) experiments, Aromatic Solvent – Induced Shifts (ASIS) studies and \(^{1}\)H-\(^{13}\)C HECTOR analysis. Same studies will be extended to the study of the conformations of 3 – substituted piperidin – 4 – one thiosemicarbazones also.