In order to search for a newer antimicrobial systems, some more new heterocyclic systems containing sulfur and nitrogen were synthesized such as 2- Thiooxo-1,3,4-thiadiazeneone, thiadiazendone, thiadiazene, thiadiazole; in addition to a number of other systems like thiazolidine, thiadiazene, thiazole, emidazole, triazole. The structures of these compounds were elucidated from their microanalysis and spectral data (NMR, IR, UV, MS). To verify the ability of these compounds to be used as an antimicrobial agents they submitted to a number of studies and we found that at least four of them have a very strong character.