Exchange reactions of gold(I) thiomalate (AuStm)n (Myocrisin) with two diselenides (RSe-SeR), selenocystine and selenocystamine have been studied in D2O by 13C NMR spectroscopy. Upon interaction of diselenides with (AuStm)n, the Se-Se bond is broken, resulting in the formation of RSe-Stm and (AuSeR)n species. RSe-Stm on further decompn. leads to the formation of thiomalic disulfide (Stm)2. The second order rate const. was detd. for the decompn. of RSe-Stm species and is found to be $3.21 \times 10^{-4}$ l mol$^{-1}$ s$^{-1}$. The intensity of thiomalic disulfide resonances increases, while the intensity of RSe-Stm resonances decreases with time. The end result of both reactions is the formation of (Stm)2 and the deposition of metallic gold and brown ppts. In both cases exchange takes place immediately, however, the overall reaction of (AuStm)n with selenocystamine was faster than with selenocystine.