Mercury(II)-induced dehydrogenation of $\alpha$-(2-phenylpiperidin-1-yl)-acetophenone oximes 7 gives rise to two different iminium compounds which subsequently react with the neighbouring oxime group. With the mercury(II)-EDTA reagent, $(E)$-7 forms the cyclic nitrones 9 and 11a, b, whereas $(Z)$-7 is transformed into oxadiazines 12 and 13a, b. The pairs of diastereomers 11a, b and 13a, b result from the equilibrium involving an iminium oximate species. The introduction of electron donor or acceptor groups into the phenyl substituent in $(E)$-15 and $(E)$-16 does not influence significantly the direction of dehydrogenation. With mercury(II) acetate in dilute acetic acid no specificity of the oxime configuration is observed, and the nitrones and oxadiazines are produced together. This may be explained by a reaction with the acetate ion at the iminium oxime stage. NMR experiments in CDCl$_3$ have shown that treatment of nitrone 2 and oxadiazine 3 with CF$_3$COOD causes ring cleavage by prototropy and after longer reaction times generates the same imidazole 23.

Key words: Hg(II)-induced Dehydrogenation, Oxime Participation, Nitrone, Oxadiazine, Iminium Oximate