An Exploration of the Metal Oxide-assisted Decomposition and Rearrangement of \(N\)-Acyl-1,3-oxazolidin-2-ones Leading to 2-Aryl-2-oxazolines [1]

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An exploration into the utility of the thermally-induced (metal oxide-mediated) \(\text{CO}_2\) extrusion and subsequent rearrangement of \(N\)-acyl-1,3-oxazolidin-2-ones to form 2-aryl(alkyl)-2-oxazolines is described. The reaction is found to give moderate yields of the corresponding 2-oxazolines. Attempts to employ the above methodology to give enantiopure (\(R\))- or (\(S\))-2,5-diphenyl-2-oxazoline (the latter form being the natural product Oxytriphine) from enantiopure (and crystallographically characterised) (\(S\))-\(N\)-benzoyl-5-phenyl-2-oxazolidinone led to the isolation of an essentially racemic product. These protocols are compared to other common methods used to form the oxazoline ring system and are placed into context with previous investigations of such ring forming reactions.

\textit{Key words:} 2-Oxazoline, Oxazolidone, Crystal Structure, Oxazole, Rearrangement